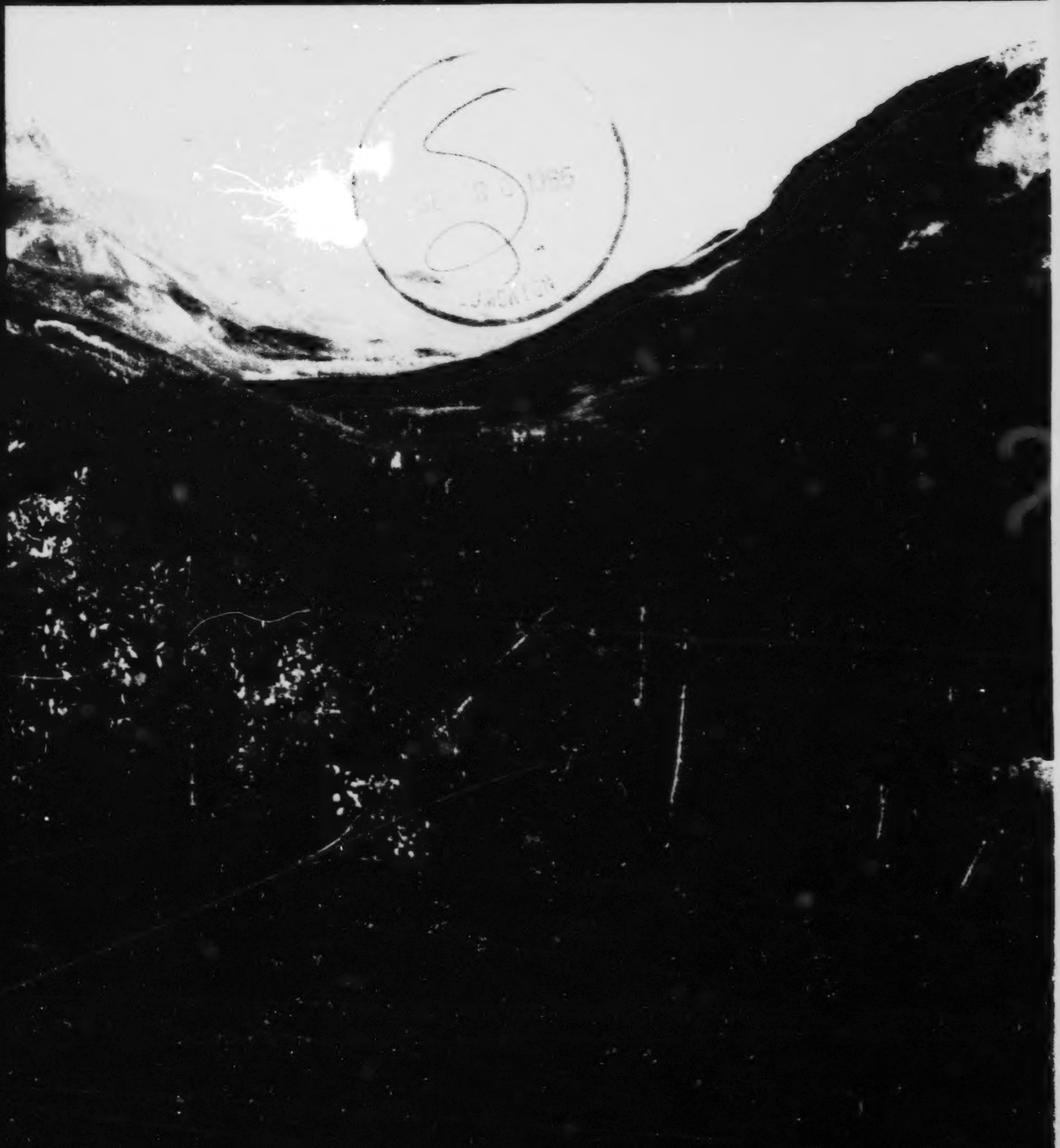
CASTLE RIVER
Sub-Regional Integrated Resource Plan



Alberta
ENERGY AND
NATURAL RESOURCES

86-0031/

CASTLE RIVER
SUB-REGIONAL
INTEGRATED RESOURCE PLAN

Approved by the Economic Planning and Resource
Development Committee of Cabinet on June 19, 1985

1985
Edmonton

Alberta
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Resource Evaluation and Planning Division

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PREFACE

This planning document was prepared by involved government agencies and public consultants in recognition of the need for improved management of Alberta's lands and resources. It applies only to public lands within the Castle River planning area, and not to any private or federal lands.

The plan presents the Government of Alberta's resource management policy for the public lands and resources within the area. It is intended to be a guide to resource managers, industry and publics having responsibility or interests in the area rather than a regulatory mechanism. Resource potentials and opportunities for development are identified with a view to assisting in the economic progress of Alberta. The plan is sufficiently flexible so that all future proposals for land use and development may be considered. No legitimate proposals will be categorically rejected. The provincial government is committed to serving Albertans; should a proposal not be in keeping with the provisions of the plan, every means will be taken to explore alternative means for accommodating the proposal in a more appropriate location, either in this planning area or on other public lands. The rejection of any proposals will only be done in writing by the associate minister or his designate.

A detailed outline for implementation will be provided for this sub-regional plan in order to identify the necessary implementation actions and roles. This implementation outline will also provide for the continuing review of the plan so that it may accommodate changing needs and situations. Wherever possible, the private sector will be provided the opportunity to be actively involved in the operational delivery of the plan.

Implementation is subject to the normal budgetary approval process. In establishing overall priorities, opportunities in other planning areas and areas currently outside the planning process will be considered.

While the plan identifies resource potentials and opportunities, the realization of these may require the dedication of major amounts of public funds. The plan will be used on the understanding that any actions required for implementation will only be undertaken as budgetary approvals are given in the normal way. The private sector will be given the first opportunity to provide any development required.

This plan has no legal status and is subject to revisions or review at the discretion of the Associate Minister of Public Lands and Wildlife.

HIGHLIGHT SUMMARY

The Castle River area is located in the southern-most portion of the Eastern Slopes, southwest of Pincher Creek and encompasses approximately 1 700 km^2 (650 mi^2). The area is characterized by a diverse landscape, ranging from mountainous terrain in the west to foothills and settled prairie in the east.

The resource management direction provided in the Castle River plan is responsive to local and regional resource demands. The plan resolves real and potential resource use conflicts and will serve as a positive and practical guide for the allocation, use and coordinated management of a wide range of natural resources. While of primary benefit to provincial government agencies with resource management responsibilities in the Castle River area, the plan's guidance will also be of interest to the private sector and the general public.

The Castle River plan will become a complementary extension of A Policy for Resource Management of the Eastern Slopes, revised by the Alberta government in 1984. Management emphasis is placed on watershed protection, recreation and tourism priorities.

Watershed protection is stressed throughout the plan. Special attention is focussed on areas of high watershed sensitivity and existing and potential site disturbances.

The plan facilitates a wide and balanced range of opportunities for expanded recreation and tourism use. Two distinct levels of use are identified:

- A core area for intensive recreation and tourism facility development opportunities.
- A vast mountainous area for extensive recreation opportunities, where only primitive facility development will be provided.

The recreational value of the Castle River area's wildlife and fisheries resources is acknowledged by the plan. Critical habitat for regionally and provincially significant wildlife species will be conserved to ensure existing populations are maintained. Recreational fishing opportunities will be maintained through habitat conservation and improvement.

While management emphasis is placed on watershed protection, recreation and tourism, the plan further provides strategic guidance for the management of timber, range, mineral and heritage resources. Timber harvesting, domestic grazing and mineral exploration and development will be subject to special operating conditions in areas with high watershed, recreation, tourism and wildlife values.

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1. INTRODUCTION

1.1 Purpose of the Plan

In June, 1977, the Alberta Energy and Natural Resources/Alberta Recreation and Parks Interdepartmental Assistant Deputy Ministers Committee identified the Castle River area of southwestern Alberta as a priority for the development of an integrated resource plan. This priority was established in acknowledgment of concerns expressed in A Policy for Resource Management of the Eastern Slopes (Alberta, 1977) regarding the need for a more detailed assessment of resource management issues identified in the Castle River area (Figure 1). The general public, special interest groups, industry and government management agencies expressed concerns about natural resource allocation. A variety of broad objectives for the Castle River area were subsequently identified and included:

- Protection of a land base for intensive and extensive recreation opportunities;
- Preservation of watershed values and wildlife and fisheries habitat;
- Maintenance of domestic livestock stocking rates and mineral resource exploration and development opportunities; and
- Establishment of a forest land base.

The Castle River Sub-Regional Integrated Resource Plan has been completed by an interagency team of the Government of Alberta to implement the regional land-use zoning priorities and guidelines presented in A Policy for Resource Management of the Eastern Slopes (1977) and to satisfy the broad objectives established for the plan. Following the direction provided by the policy, priority in the Castle River Sub-Regional Integrated Resource Plan is given to **watershed** and **recreation** management.

In June, 1984, the Alberta government approved the revised Eastern Slopes Policy (Alberta, 1984). This document stressed the importance of **tourism** opportunities and benefits in addition to the

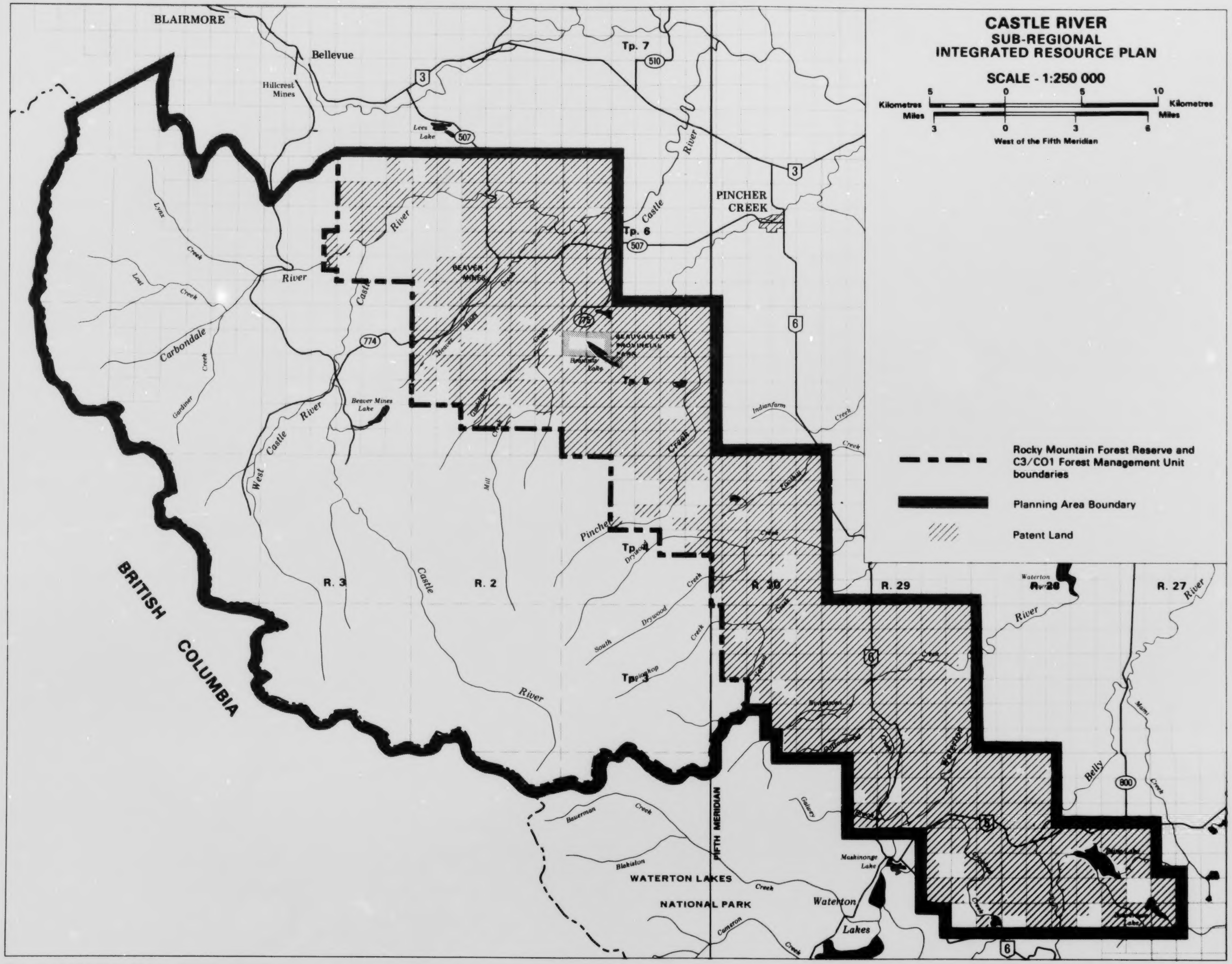
CASTLE RIVER
SUB-REGIONAL
INTEGRATED RESOURCE PLAN
SCALE - 1:250 000
Kilometres 5 0 5 10 Kilometres
Miles 3 0 3 6 Miles
West of the Fifth Meridian
Rocky Mountain Forest Reserve and C3/CO1 Forest Management Unit boundaries
Planning Area Boundary
Patent Land
BLAIRMORE
Bellevue
Hillcrest Mines
Lees Lake
PINCHER CREEK
BEAVER MINES
Beauvais Lake Provincial Park
Beaver Mines Lake
BRITISH COLUMBIA
WATERTON LAKES NATIONAL PARK
Waterton Lakes
Maskinonge Lake
FIFTH MERIDIAN
Castle River
West Castle River
Carbondale
Lynx Creek
Lost Creek
Gardiner Creek
Mill Creek
Pincher Creek
South Drywood Creek
Indianfarm Creek
Waterton River
Belly River
Blakiston Creek
Bauerman Creek
Cameron Creek
Tp. 7
Tp. 6
Tp. 5
Tp. 4
Tp. 3
R. 3
R. 2
R. 30
R. 29
R. 28
R. 27
3
507
510
774
775
6
800

Fig. 1: PLANNING AREA

watershed and recreation management priorities. This shift in policy direction occurred to permit increased emphasis on the development of a strong tourist industry and for greater recreation development by the private sector. Integrated resource planning is identified as a key mechanism for the provision of these opportunities to ensure the integrity of the original Eastern Slopes Policy is maintained.

The Castle River plan will subsequently serve to mitigate conflicts among priority objectives -- watershed, recreation, tourism -- and other resource-use objectives. In conjunction with the Eastern Slopes activity matrix (as illustrated later in Table 2), the refined Eastern Slopes zoning, resource management objectives and guidelines, and resource management area intents allow for appropriate utilization of the diverse resource base within the Castle River area. When approved by the Alberta Cabinet, the integrated resource plan will act as a decision-making tool for government resource management agencies by providing direction to operational plans and assisting in setting priorities for annual work plans. As well, the integrated resource plan will become a positive guide to the tourism industry, the private sector involved in resource operations and the general public.

1.2 Overview of the Planning Process

The Resource Planning Branch in the Resource Evaluation and Planning Division of Alberta Energy and Natural Resources was given the responsibility of co-ordinating and preparing the Castle River Sub-Regional Integrated Resource Plan. An interdepartmental planning team was formed, composed of management agencies in Alberta Energy and Natural Resources (Alberta Forest Service, Fish and Wildlife Division, Public Lands Division, Mineral Resources Division) and Alberta Recreation and Parks. The preparation of terms of reference (Alberta, 1977a) was the planning team's first task. That document, approved in December, 1977, describes the planning area, the purpose of the plan, resource management concerns and issues, and briefly explains the planning process.

Once the terms of reference were completed and approved, the planning team began data collection and analysis. During that stage of the planning process, the planning team analysed and evaluated the resources of the Castle River area in terms of their capability to sustain use, the present use of and demand for each resource, the potential for future development and the objectives and policies of participating agencies.

After data collection and analysis was complete, the planning team began policy formulation. The "Castle River Resource Management Policy" (Alberta, 1982), endorsed by the Resource Integration Committee in August, 1982, contains a statement of broad resource management objectives and describes and illustrates resource management areas and refined Eastern Slopes Zones for the Castle River area. The resource management areas provide a means of translating Alberta government resource policies into a planning or decision-making format. The resource management areas identify broad units of land that have a common resource management intent. The refined zoning presents broad land-use allocations based on the most recent resource information.

In the development of the "Castle River Resource Management Policy", positive and negative impacts associated with the refinement of the Eastern Slopes Policy were identified and considered prior to endorsement by the Resource Integration Committee. Consideration of these implications has ensured the development of a rational resource management policy.

At the plan design stage, the broad resource management objectives and resource management area intents for the Castle River planning area were further qualified by the development of specific resource management objectives. These objectives identify the achievable, future management conditions that government agencies participating on the plan will pursue. The complexity of the objectives warranted detailed assessment so that interrelationships would be fully appreciated. Where the achievement of two or more resource objectives proved to be mutually exclusive or in conflict, resource management guidelines were prepared as an integrating measure to mitigate and, where possible, to resolve existing or potential conflicts. The resource management guidelines also serve to identify actions required to implement resource management objectives. Table 1 has been prepared to accommodate a quick page reference to resource management objectives and guidelines in this document.

Since resource management guidelines provide broad direction for the resolution or mitigation of existing or perceived conflicts, and do not identify in detail the means and actions to be employed by the operational resource manager, a high degree of integration at the operational level is required. The consideration of implications arising from the achievement of resource management objectives and guidelines consequently ensures comprehensiveness in the integration of resource uses and activities within the Castle River area. A detailed assessment of resource management objectives and guidelines has also served to identify future program costs to be incurred through implementation.

TABLE 1 PAGE REFERENCE TO RESOURCE MANAGEMENT OBJECTIVES AND GUIDELINES

	OBJECTIVES AND GUIDELINES*											
	CASTLE RIVER PLANNING AREA		RESOURCE MANAGEMENT AREAS									
			A Carbondale River -Lynx Creek		B O'Hagan -Adanac		C Castle Carbondale Corridor		D Castle -Front Range Headwater		E Castle Foothills	
RESOURCES	Objectives	Guidelines	Objective	Guideline	Objective	Guideline	Objective	Guideline	Objective	Guideline	Objective	Guideline
ECOLOGICAL	17	–	–	–	–	–	–	–	73	73	–	–
FISHERIES	17–18	33	38	38	–	–	60	60	74	74	87	87–88
HISTORICAL	18	33	39	39	50	50	61	61	75	75	88	88–89
MINERALS	18	33	40	40	51	51–52	62	62	76	76–77	90	90
RANGE	18–19	33–34	41	41–42	52	52	63	63	77	77–78	85	85
RECREATION	16–17	33	42	42–43	53	53	59	59–60	71–72	72	91–93	93
TIMBER	19	34–35	43	43–44	53	53	64	64	78	78	94	94
TOURISM	17	–	–	–	–	–	57	57–58	–	–	–	–
WATER AND WATERSHED	16	32–33	37	37	47	47	55	57	70	71	83–85	85
WILDLIFE	19	35	44	44–45	49	49–50	65	65–66	79	79–80	86	86–87

* Order of listing does not imply priority

1.3 Organization of the Plan

Chapter 2 of this document establishes a general perception of natural resources in the Castle River area. Natural resource capabilities, current and future resource uses and demands are reviewed and perceived problem areas for natural resource management are identified. The identification of these problem areas provides a context for resource management actions proposed in following chapters.

Chapter 3 outlines broad resource management objectives for the Castle River area.

Chapter 4 reviews the refinement of the Eastern Slopes zoning for the Castle River area in general terms. The intents of land-use zones are specified and general resource management guidelines applicable to the planning area in total are outlined.

Chapter 5 identifies five land areas in the Castle River area for more detailed management purposes. Within the overall context of priority resource uses for these resource management areas, rationale for Eastern Slopes zoning refinements is given and detailed resource management objectives and guidelines are outlined.

Chapter 6 provides a general discussion on administrative structures and procedures necessary for plan implementation, review and amendment.

2. RESOURCE SYNOPSIS

The Castle River planning area is located in southwestern Alberta (Figure 1). Situated southwest of Pincher Creek, the area encompasses approximately 1 700 km^2 (650 mi^2).

The Castle River area has the highest recorded annual precipitation and winter snowfall within the Eastern Slopes. Consequently it was identified in the 1977 Eastern Slopes Policy as an important water-producing area.

The Castle River area is a portion of the Oldman River Basin. The two major tributaries, the Carbondale and Castle rivers, account for 73 per cent of runoff within the planning area. Gladstone, Mill and Whitney creeks drain into the Castle River, while Pincher Creek flows directly into the Oldman River.

Streams originating in the Front Range[1] flow east into Waterton River, while the southeastern corner of the planning area is drained by the Belly River.

Streamflow is variable, with peaks occurring in May and June. Since 1900, flooding has occurred at approximately 11-year intervals with the last major flood in June, 1975. Suspended sediment concentrations are low except during peak flows. Downstream demands for continued maintenance of water quality and quantity are high.

The montane, subalpine and alpine environments found in association with the West Castle and South Castle valleys and the Front Ranges were recognized in the original Eastern Slopes Policy to have very high potential for wildland recreation. The landscapes of this area are a natural extension of those found in Waterton Lakes National Park and are most significant for their scenic beauty, some of the best lake and mountain-stream fishing in southern Alberta, extensive stands of big sage brush, and the largest stands of whitebark pine in the province. This area provides secure habitat for elk, mule deer, mountain goats, bighorn sheep, grizzly and black bear, cougar and numerous other mammal species present in the area. Provisions have subsequently been made in the plan to conserve these wildland resource values.

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[1] See Glossary for definition.

The Castle River area contains significant ungulate populations and consequently is important for hunting. Populations of furbearers, upland game birds and waterfowl are also important locally. The current supply of ungulates does not meet the demands for recreational hunting. The eastern canyons of the Front Ranges contain some of the best bighorn sheep range in North America. Within the planning area, elk winter range supports approximately 850 animals. Most deer winter range occurs in the foothills in the vicinity of Lees and Beauvais lakes. There are nine registered traplines in the Castle River area. Trapline income has become a major source of income for some owners.

Lakes and streams in the Castle River area are some of the most productive and popular trout-producing waters in Alberta. Access is good and most of the lakes and streams are heavily used for fishing. Beauvais, Beavermines, Paine, Bathing, Beaverdam and Little Beaverdam lakes are significant recreational fisheries. A number of high altitude lakes exist in the planning area. Although these lakes have low fisheries productivity they are heavily used for recreational fishing.

All streams are closed to angling from November 1 to May 31 because fish congregate in overwintering pools during this period and are vulnerable to exploitation. All streams are subject to Alberta's fisheries management program which permits annual open seasons on large rivers and alternate-year openings on tributaries. Spawning occurs throughout the length of most streams in the planning area and no reach is considered to be vastly superior to any other.

A high proportion of the recreation use is associated with consumptive and non-consumptive fish and wildlife use in the planning area. It has subsequently become apparent that recreation uses, activities and developments should be co-ordinated in a manner consistent with the maintenance of fish and wildlife habitats and population levels.

Resource uses within the Castle River area may have adverse impact on fish and wildlife populations and habitat. Several situations have been identified. For example, increased industrial access has expanded hunting and fishing pressures into previously remote areas; improved fire-suppression techniques have interrupted natural succession processes, thereby reducing available wildlife ranges; and domestic livestock may be competing with wildlife for the limited forage base.

Currently there are 66 recorded prehistoric sites, 31 historic sites and two palaeontological sites in the Castle River area. Potential for the discovery of additional sites is very high.

Only limited archaeological investigation has taken place in the Castle River area. Most of the prehistoric sites discovered are buried or surface-exposed campsites; however, there are also tipi rings, cairns and possible bison kill sites. Potential for new discoveries is particularly high in alpine areas (e.g., mountain passes), areas along stream and river valleys and the entire foothills portion of the Castle River area.

The historical significance of the area is shown by the identification of original or early homestead structures such as houses, barns and original out-buildings. Significant features include at least three sizable coal mining sites in the northern part of the Castle River area near the Hamlet of Beaver Mines, two cemeteries and a single grave. Because the Castle River area was the focus of early ranching, coal mining and forestry activity, potential for the discovery of additional sites is high.

While the number of known palaeontological sites in the Castle River area is low, potential for fossil discovery is high. As with archaeological sites, exposures along stream and river banks are considered to have potential. Areas of rock exposure above the tree-line (Prime Protection Zone) also possess high potential. The main occurrence of fossils has been in Mesozoic-age strata (Jurassic Fernie Formation) and in the clastic Cretaceous sequence (Alberta Group and Belly River Formation). Precambrian and Palaeozoic sequences may also have palaeontological potential. These sequences may be exposed in ridge and mountain sections of the Castle River area.

The Castle River area is also important regionally as an intensive recreation area for the people of southern Alberta. Water-based recreation activities are in greatest demand, with Beaver Mines Lake drawing about 50 per cent of the designated summer recreation use within the Rocky Mountain Forest Reserve portion of the Castle River planning area. Recreation use associated with fish and wildlife resources is high. Alternate annual stream closures concentrate use in the Castle River Valley one season and in the Carbondale River Valley the next. Alberta Forest Service data (Alberta, 1978) indicate that the popularity of fishing, in conjunction with alternate annual stream closures, has major implications for the location of recreation facilities. The Castle River is also considered to have potential for canoeing and kayaking, although the present level of use is low.

Winter recreation use levels in the Castle River area have been substantially lower than summer levels. Downhill skiing occurs at the West Castle Ski Area, with some ski touring on adjacent lands. Twenty kilometres of cross-country ski trails are located at the confluence of the South and West Castle rivers. Snowmobiling occurs at low to moderate intensity levels throughout the area. The most popular snowmobiling locations are Beaver Mines Lake, South and West Castle valleys and the Carbondale watershed.

Beauvais Lake Provincial Park is the only provincial park in the Castle River area. The park is used mostly for fishing, day use and camping. Long-range plans of Alberta Recreation and Parks for new water-based recreation opportunities and facilities have indicated that the Paine-Beaverdam lakes area has high potential for park development. The department also has interest in the South Castle area for outdoor recreational purposes.

The supply of recreation facilities in the planning area is inadequate to meet present demand. This supply shortfall has created a concern that future attempts to meet recreational demands within the Castle River area may lower its high environmental qualities.

Alberta Tourism and Small Business has estimated (1981) tourism use of southwestern Alberta will increase by more than 250 per cent between 1980 and 2000 (Alberta, 1980). This forecast implies that there will be a substantial increase in tourism within the Castle River area. To the south, Waterton Lakes National Park is a regional centre for tourism. To the north, Crowsnest Pass communities would like to benefit from tourist traffic and diversify the local economy through tourism development. There are three private-sector tourist facilities in the Castle River area. These are the West Castle Ski Area, Impeesa Boy Scout Camp (used by other groups in addition to boy scouts) and the Gladstone Ranch.

The West Castle Ski Area provides intermediate and expert skiing on Gravenstafel Ridge within the planning area. Development is currently limited to ski lifts and maintenance facilities. Further development to provide year-round recreation opportunities has been considered by the West Castle Management Committee in order to diversify markets and ensure long-term economic stability.

A four-season resort development near the existing West Castle ski facility is perceived to have a positive influence on the local and regional economies. The development would provide the first major resort of its type in southern Alberta with potential to attract visitors from across North America.

A four-season resort development concept was prepared by the West Castle Management Committee on behalf of the Town and Municipal District of Pincher Creek, the co-owners of the existing ski facility. The development concept was formally submitted to the Alberta government in 1983 in accordance with the government's preliminary disclosure process. In 1984, the Alberta government announced its support in principle of a concept consisting of additional ski lifts on Haig Ridge, an alpine village, condominium units and the installation of extensive snowmaking equipment. Approvals of design, engineering, environmental and economic considerations must be completed before a lease is granted by the government. These approvals will also become a prerequisite for the sale of a limited amount of Crown land required for intensive development. No other Crown land sales are currently envisaged for the Castle River area.

With support for the preliminary disclosure, the Town and Municipal District of Pincher Creek will be able to proceed to request proposals from private-sector developers. Provisions are subsequently made in the plan to facilitate future development.

Livestock production is the mainstay of the agricultural industry in the Castle River area. There are 43 grazing leases and two grazing permits in the White Area on Crown land. These leases encompass 152 quarter sections (9 842 ha) and support 7 820 animal unit months of grazing. Within the Rocky Mountain Forest Reserve, domestic grazing occurs on four allotments. The allotments have a carrying capacity now rated at 4 073 animal unit months of use. This stocking capacity was held in 1977. Over the past 20 years grazing use in the Castle River area has declined from a peak of 5 569 animal unit months in 1962. Reductions are primarily the result of brush encroachment on the primary rangeland and other land-use developments.

The domestic grazing land base within the Castle River area provides a significant contribution to the local economy. In recognition of this there have been verbal commitments to local ranchers from government ministers that there will be no reductions in grazing resulting from implementation of the Eastern Slopes Policy. Concern has subsequently been expressed that the maintenance of domestic grazing opportunities may impinge on the recreation resource which, along with the watershed, has been established as a priority in the Castle River area by the Eastern Slopes Policy. Two factors form the basis for this concern. First, the primary range often overlaps and may be in conflict with high-potential recreation development areas.

Second, the 1982 Cabinet directive allows grazing in the General Recreation Zone on a restricted basis, which was not permitted previously. This latter factor will require a high level of integration between range and recreation management to ensure the provision of these opportunities is not mutually exclusive.

The demand for timber in the Castle River area is divided between commercial operators and local individuals. The timber resource of the area is managed under two forest management units: C3 within the Green Area and C01 in the White Area. Only the former is managed on a sustained-yield basis. Since 1966, the C3 forest management unit (F/M Unit) has been managed under two coniferous timber quotas (to provide commercial needs) and a Miscellaneous Timber Use area (to meet local demand). The initial 15-year quota terms, authorizing a combined annual allowable cut of 65 720 m^3 (2 320 mcf) expired in 1981. Revelstoke's C3 quota represented 34 per cent of its mill capacity while Johnson Bros.' C3 quota represented 40 per cent of its mill capacity. The remainder of the latter's mill requirements are obtained from the C1 and C2 F/M Units within the Livingstone/Porcupine Hills area (north of Castle). The local demands have been met from a Miscellaneous Timber Use area with an annual allowable cut of 4 000 m^3 (140 mcf). It is anticipated that the quota demands will remain at approximately 65 720 m^3 and the local demand will continue at 4 000 m^3.

In 1981, when the initial 15-year annual allowable cut projection expired, the severe mountain pine beetle infestation prohibited the calculation of a new unit annual allowable cut. Salvage cutting was required to reduce the fire hazard, utilize the timber and initiate forest renewal. Therefore, the two quota certificates were renewed at unspecified cut levels to facilitate efficient removal of the timber damaged by mountain pine beetle. As such, the current timber management strategy employed in the C3 F/M Unit is to maximize utilization of pine killed by mountain pine beetle and to maintain the timber productivity level of the unit. In this respect, all merchantable dead pine stands are salvaged.

Reforestation is continuing in all areas harvested, including areas harvested as a result of the mountain pine beetle infestation. As of April 30, 1983, 62 per cent of the 8 900 ha (22 000 acres) harvested in C3 has been surveyed and is satisfactorily regenerated. Most of the remaining areas, including beetle salvage sites, have been treated and are awaiting regeneration surveys to assess stocking capacities. However, there are approximately 800 ha (2 000 acres) of steep land harvested prior to the beetle logging that are still undergoing reforestation. In addition to these management practices, there are plans for the rehabilitation of sub-merchantable beetle-killed pine stands to ensure the highest productivity is maintained in the unit. Field surveys will confirm areas requiring fuel modification and will aid in reforestation efforts.

The mountain pine beetle has attacked all pine stands at or near rotation age (20 cm diameter or greater). By April 30, 1984, 515 000 m^3 (18 188 mcf) had been harvested in C3 and that portion of C01 in the Castle River area. There is an estimated volume of 6 450 m^3 (228 mcf) of infested merchantable timber to be harvested in 1984-1985.

Effective 1986, a sustained-yield annual allowable cut will be established for C3, giving priority to harvesting the decadent spruce reserves and pine stands merchantable to the six-inch stump diameter standard that had been missed by the pine beetle. The removal of the spruce is necessary as a result of minor outbreaks of spruce beetle which have also occurred in the area. A timber management plan, developed in association with the new annual allowable cut, will be completed by 1986 to assess the merchantable volume of timber remaining and the age-class distribution situation. The major concerns are the predominance of immature pine which resulted from a major fire in 1936 and, most recently, the effects of the pine beetle infestation. The timber management plan will also address combining the C1, C2 and C3 F/M Units with the intent of achieving a balanced age-class distribution within the Crow portion of the Bow-Crow Forest to provide for the continuation of commercial operations.

Preliminary estimates of the short-term annual allowble cut can be made, based on the known reserves of overmature spruce and those pine stands merchantable to the six-inch stump diameter standard that had been missed by the beetle. There is approximately 132 770 m^3 (4 690 mcf) of overmature spruce to harvest. This would be sufficient to supply local mills for two years. Because the age of the spruce and the threat of a spruce beetle infestation, this timber should be removed as quickly as possible without serious detriment to watershed, wildlife and recreation values. The estimated volume represents approximately 50 per cent of the overmature timber, the remainder being required to maintain other resource values. Smallwood pine volumes are expected to contribute little to the short-term wood supply situation and any other remaining timber stands are either on inoperable slopes in Zone 1 or are immature.

In summary, the harvest level in C3 in the next 40 to 50 years will be depressed as only decadent spruce reserves and a relatively small area of marginally merchantable pine stands are available for harvesting during this period. Harvest levels will steadily increase to a sustainable level in C3 once the large area of immature pine stands reach merchantable size.

In the C01 unit, the strategy is to maximize utilization through salvaging of timber on lands scheduled for agricultural development. Timber will remain on lands where wildlife and environmental protection objectives are given priority.

In addition, 1 490 ha (3 684 acres) of productive timberland in the White Area (C01), immediately adjacent to the Green Area, have been identified for sustained yield timber production. These lands have been reforested following logging operations under the beetle salvage program.

Reclamation of abandoned, disturbed sites where industrial dispositions have expired has been carried out by the Alberta Forest Service since 1978. Approximately 40 ha (100 acres) have been reclaimed with approximately 11 ha (27 acres) to be done. Reclamation which is the responsibility of industry is on-going and is done to Alberta Forest Service (AFS) standards.

Exploration for petroleum and natural gas began in the Castle River area in the early 1900s but was relatively inactive until 1948 when gas from the Rundle Zone in the Pincher Creek gas field was discovered. Continued exploration and development resulted in the discovery of similar thrust faulting features in the Waterton gas field in 1957 and the Lookout Butte gas field in 1959. The three gas fields lie in a southeast - northwest alignment. Potential interests for new discoveries of petroleum and natural gas include an area to the northwest of the Waterton gas field and an area in the South Castle Valley.

Natural gas resources in portions of the Castle River area provide a significant contribution to the provincial economy. Concerns, however, have been raised about the co-existence of natural gas exploration and development with other resource uses within the Castle River area.

Although there are no operating coal mines in the Castle River area, coal has been extracted along Adanac Pass, Gladstone Creek, near Beauvais Lake Provincial Park and in the Beaver Mines area. Recent exploration has shown good potential on Maverick Hill and Hastings and Willoughby ridges, but development of these coal deposits may conflict with critical winter habitat for wildlife.

The Castle River area is not provincially important for its quarriable and metallic minerals. Two metallic mineral deposits, however, have been discovered and are of interest. One is a copper-silver-uranium occurrence on Spionkop Ridge. Because of environmental sensitivities associated with this Prime Protection area, developments are not being considered. The second deposit is along Dungarvan Creek where prospecting has revealed magnetite. The commercial viability of this deposit is unknown and development proposals have not been made.

In summary, the Castle River area contains a diverse set of natural resources, possessing significance at local, regional, provincial, national and international levels. Demands for the continued maintenance of high water quality and quantity, diversity of wildlife and fisheries populations, high-quality recreational opportunities, and extractable resource uses such as timber, petroleum and natural gas and coal have significance from the local to international level. Livestock and fur production are most significant at local and regional levels. The diversity of these resource demands upon the Castle River area dictates that resource management proceed in an orderly and comprehensive manner. The Castle River Sub-Regional Integrated Resource Plan has been prepared as a means to achieve this end.

3. CASTLE RIVER RESOURCE MANAGEMENT OBJECTIVES

Agencies of the Government of Alberta have identified objectives for the management of resources which have broad application to the Castle River area. These broad resource management objectives establish future standards or conditions which agencies participating in the plan will have to strive to attain or maintain. Not all objectives are expected to be met in all locations or at the same time.

The **watershed, recreation** and **tourism** resource management objectives have highest priority in the Castle River area and consequently are listed first. Management emphasis will be placed on the achievement of these objectives. The remaining resource management objectives are listed in alphabetical order.

Water and Watershed

To recognize watershed protection as the highest priority in the Castle River area.

To maintain and to improve water quality, quantity and flow regime for aquatic habitat, onstream and downstream users.

To prevent vegetation changes that could cause extreme fluctuations in streamflow resulting in erosion of channel materials, high sediment loads or property damage.

To maintain the water quality of lakes.

To prevent or minimize soil erosion associated with land-use activities.

To monitor and correct soil erosion and sedimentation problems as they occur.

Recreation

To develop a diverse range of non-commercial recreation opportunities which are consistent with provincial recreation objectives and policies, and which complement existing recreation opportunities within the region.

To promote a range of commercial recreation opportunities which are consistent with provincial recreation objectives and policies, and which complement existing recreation opportunities within the region.

To provide trail systems and associated facility nodes for camping and day use for summer and winter activities including hiking, equestrian, cross-country skiing and motorized vehicle use.

To maintain the natural and aesthetic quality of the Castle River area for recreation purposes.

To protect areas with high recreation potential.

To minimize conflicts between recreation users, especially those engaged in motorized and non-motorized recreation activities.

To ensure compatible development of resources between recreation and other land-use activities.

Tourism

To promote appropriate development of parts of the Castle River area as a year-round travel destination area in a manner consistent with sound environmental land management.

To assist in the continuation of tourist operations to meet the recreational and social needs of residents and visitors to the area.

To provide opportunities for the private sector to participate in developments that cater to the needs of area users.

Ecological

To protect representative and unique areas of ecological significance for the recreational, scientific or educational use of Albertans now and in the future.

Fisheries

To maintain and, where possible, to enhance naturally reproducing game and non-game fish populations and their habitats.

To maintain and, where possible, to enhance a variety of recreational fishing opportunities through habitat improvement and/or artificial stocking.

To minimize the effects of resource development on aquatic habitat.

To continue to inform and educate the public in the conservation and management of fisheries resources.

Historical

To protect historical resources (historic, prehistoric and palaeontologic) from potential or actual impact related to future resource development and to manage the historical resources for scientific, educational and recreational purposes.

Minerals

To provide opportunities for industry to define the extent of and develop or extract minerals where reserves have been proven or productive formations exist.

To provide opportunities for mineral exploration in previously unexplored areas and formations.

Rangeland

To protect and to maintain the productive capacity of rangeland in the Forest Reserve.

To maintain the 1977 domestic stocking capacity of 4 073 animal unit months currently held in the Forest Reserve.

To maintain the current domestic stocking capacity on Crown lands (7 820 animal unit months) outside the Forest Reserve.

To target a long-term increase in the number of animal unit months by approximately 1 120 to optimize the use of the forage resource.

To improve management of the range through appropriate management practices.

To minimize the impacts of other resource developments on the level of grazing use.

To reduce the annual loss of grazing land due to brush encroachment and other resource uses.

To monitor and to minimize the competition for range resources between domestic livestock and wildlife.

To provide a properly-managed forage base for use by wildlife and domestic livestock and for the protection of watershed values.

Timber

In the short term, to manage stands of beetle-killed timber, to reduce the probability of wildfire, to maximize utilization of the resource and to complete forest renewal.

In the long term, to manage the forest land base to provide a supply of timber on a sustained-yield basis to meet industrial and local requirements (current committed annual volumes estimated at 65 720 m^3 [2 321 mcf] and 4 000 m^3 [140 mcf], respectively).

To return the forest to, and to maintain the forest in, a vigorous and healthy condition.

To protect the forest from damage, including destruction by fire, insects, disease or other causes.

To encourage forest research in insect management problems and in reforestation on steep slopes.

To continue reclamation of industrial disturbances where industrial dispositions have expired.

Wildlife

To maintain and, where possible, to enhance the distribution and abundance of all wildlife populations (including furbearers) and their habitats.

To maintain and, where possible, to enhance opportunities for consumptive and non-consumptive wildlife use.

To protect habitats critical to the survival of specific wildlife populations and to minimize the detrimental effects associated with resource activities on those habitats and populations.

To reduce wildlife depredation, illegal wildlife harvest and conflicts between hunters and landowners.

To continue to inform and educate the public in the conservation and management of wildlife resources.

4. REFINED EASTERN SLOPES ZONES

A Policy for Resource Management of the Eastern Slopes, Revised 1984 (Alberta, 1984) provides policy direction for integrated resource management and planning for the entire Eastern Slopes region including most of the Castle River area. The document contains two distinct but interrelated components: an Eastern Slopes policy and a regional plan. The former contains policy statements, which define management intentions for the region, and policy guidelines, which identify the most important resource opportunities in the region and the major priorities to be considered in the management of the Eastern Slopes. The regional plan provides more specific resource management direction through a statement of regional objectives and the delineation of regional land-use zones. A general implementation strategy is described for both components. Integrated resource planning is identified as a key mechanism for the implementation of the Eastern Slopes regional plan.

The regional plan relies on a land-use zoning system to identify units of land for which intents and objectives are specified. The system consists of three broad land-use categories which designate large areas of land for varying degrees of protection, multiple-use management or resource development. Within these broad categories, eight detailed land-use zones outline a range of compatible activities (Table 2) in keeping with the intents and management objectives of the zones. The eight zones are defined by their intents; the activities and uses listed in Table 2 are only a representative group of those which may be consistent with any given zone intent. The general intent of each zone is given in Table 3.

The Castle River Sub-Regional Integrated Resource Plan generally conforms to the fundamental provisions of A Policy for Resource Management of the Eastern Slopes: Revised 1984. However, because the regional plan is intended to provide interim direction for land-use decisions only, sub-regional integrated resource plans will supersede and take precedence over the regional plan.

The Castle River Sub-Regional Integrated Resource Plan has been prepared to instate the watershed protection and recreation priorities for the Castle River area. These primary intents were explicitly stated in the original Eastern Slopes Policy approved by the provincial

TABLE 2. COMPATIBLE ACTIVITIES BY LAND USE ZONE

ZONE ACTIVITY	1 PRIME PROTECTION	2 CRITICAL WILDLIFE	3 SPECIAL USE	4 GENERAL RECREATION	5 MULTIPLE USE	6 AGRICULTURE	7 INDUSTRIAL	8 FACILITY
Non-motorized recreation	■	■	▨	■	■	■	▨	■
Fishing	■	■	▨	■	■	■	▨	■
Hunting	■	■	▨	▨	■	■	▨	□
Scientific study	■	▨	▨	▨	■	■	■	■
Trapping	■	▨	▨	▨	■	■	□	□
Trails, non-motorized	▨	▨	▨	■	■	■	▨	■
Transportation & utility corridors	▨	▨	▨	▨	■	■	■	■
Primitive camping	▨	▨	▨	■	■	■	□	□
Intensive recreation	▨	□	▨	■	■	▨	▨	■
Off-highway vehicle activity	□	▨	▨	▨	■	■	■	■
Logging	□	▨	▨	▨	■	■	□	▨
Domestic grazing	□	▨	▨	▨	■	■	■	▨
Petroleum and natural gas exploration & development	□	▨	▨	▨	■	■	■	▨
Coal exploration & development	□	▨	▨	▨	■	■	■	□
Mineral exploration & development	□	▨	▨	▨	■	■	■	□
Serviced camping	□	▨	▨	■	■	▨	▨	■
Commercial development	□	□	▨	▨	▨	▨	▨	■
Industrial development	□	□	▨	□	■	▨	■	▨
Residential subdivisions	□	□	▨	□	▨	■	▨	■
Cultivation	□	□	▨	□	▨	■	▨	▨

■ Compatible Use — Uses that are considered to be compatible with the intent of a land use zone under normal guidelines and land use regulations.

▨ Permitted Use — Uses that may be compatible with the intent of a land use zone under certain circumstances and under special conditions and controls where necessary.

□ Not Permitted Use — Uses that are not compatible with the intent or capabilities of a land use zone.

These activities are only representative of the range of activities that occur in the Eastern Slopes. For these and any other activities, the possibility of whether they should or should not take place in a particular area must always be measured against the fundamental management intentions for that zone. Since economic opportunities are not all known in advance, site-specific developments may be considered in any zone.

Table 3

INTENTS OF THE EASTERN SLOPES POLICY ZONES

Zone	Title	INTENT
1	Prime Protection	To preserve environmentally sensitive terrain and valuable aesthetic resources.
2	Critical Wildlife	To protect specific fish and wildlife populations by protecting aquatic and terrestrial habitats that are crucial to the maintenance of those populations. This zoning designation recognizes only those habitat areas, which are crucial to the life cycle of particular species due to vegetation, climate or topography.
3	Special Use*	To recognize historical resources, scientific research areas and lands which have unique management requirements or legislative status or which can not be accommodated elsewhere.
4	General Recreation	To retain a variety of natural environments to serve as a focus for a wide range of outdoor recreational activities.
5	Multiple Use	To provide for the management and development of the full range of available resources, while meeting long-term objectives for watershed management and environmental protection.
6	Agriculture*	To designate lands which are currently utilized or are considered suitable for cultivation or improved grazing.
7	Industrial*	To recognize existing or approved industrial operations.
8	Facility	To recognize existing or approved settlement and commercial development areas.

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*Not applied in the Castle River area.

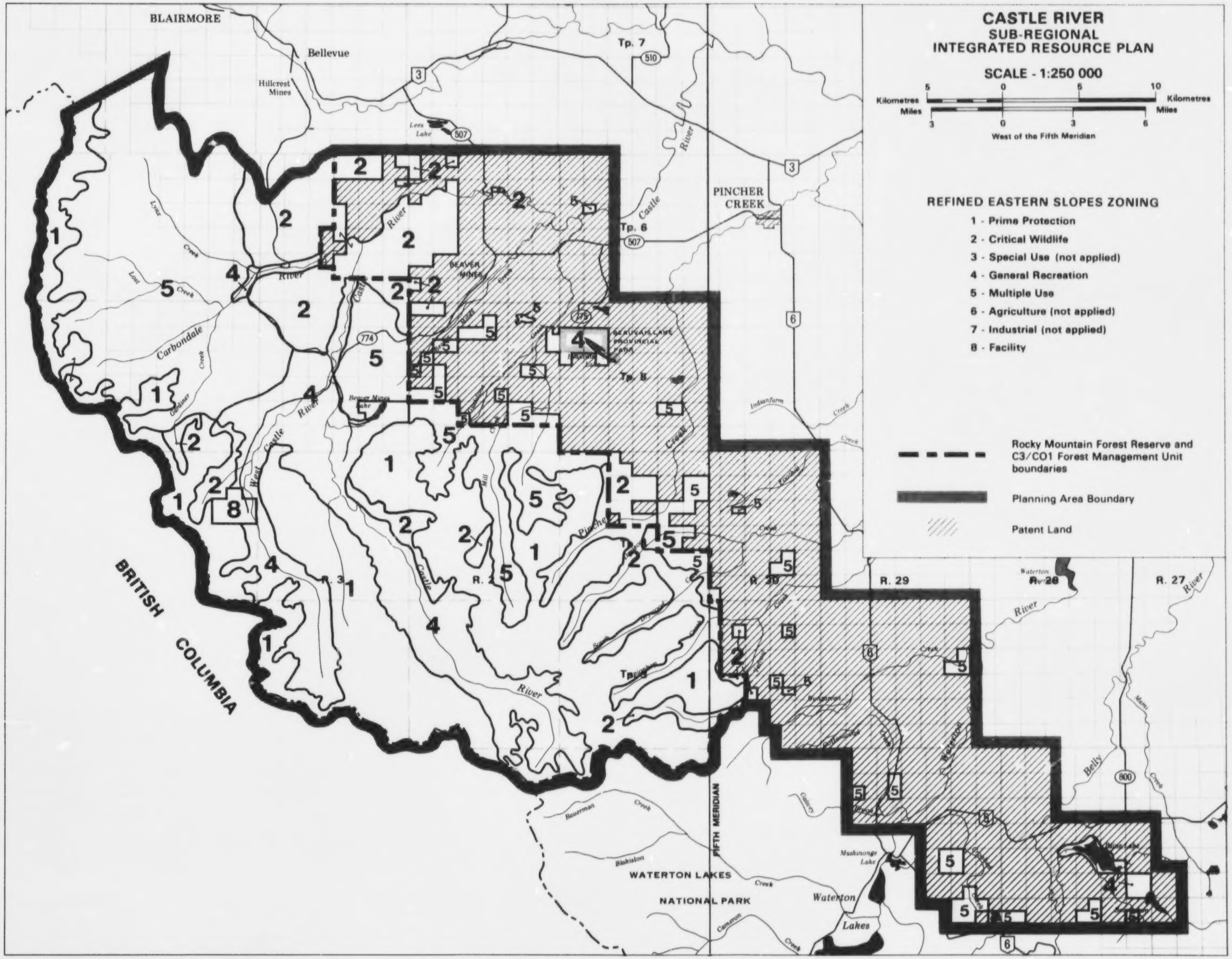
Cabinet in 1977. Within the context of the primary intents, the regional land-use zones for the Castle River area have been refined on the basis of more detailed information and more specific objectives. Accordingly, the regional land-use zones have been refined (Figure 2). The regional zoning maps will no longer apply in the planning area.

The Castle River plan uses the same set of eight zones defined in the regional plan for the Eastern Slopes. Direction on the compatibility and conditions which apply to the zones in the planning area is found in Chapter 5 in the form of resource management guidelines. The Table of Compatible Activities will continue to apply to the refined zoning for the Castle River area with a few exceptions where guidelines are explicitly contrary to its direction.

In some instances during the delivery of the plan, the suitability of an activity in a particular location based on more detailed site information and a specific description of the activity (e.g., technology and mitigation measures to be employed) may result in a decision which appears to be contrary to the refined zoning, Table of Compatible Activities or guidelines in the plan. In such site-specific instances, the compatibility of a given activity with the management intents and objectives for the area will become a prerequisite prior to approval.

The refined Eastern Slopes zoning was developed in acknowledgment of the Castle River area's importance for watershed protection and recreation. The refined zoning provides both local and regional users a balance of recreation opportunities including intensive facility development and dispersed backcountry use. The refined zoning also recognizes the significance of the Castle River headwaters as an important water-producing area and protects the integrity of this mountain landscape. As well, the refined zoning provides better protection for wildlife resources and minimizes conflicts between other resource uses.

In the Castle River area existing Eastern Slopes zones cover lands east and west of the Rocky Mountain Forest Reserve. Because most lands east of the Forest Reserve are privately owned, the Eastern Slopes Policy is not applicable to their management. Generally, Crown lands east of the Forest Reserve will be managed under the Multiple Use Zone. However, Crown lands along the Castle River are designated Critical Wildlife, while Crown lands in and around Beauvais Lake Provincial Park, and around Paine and Beaverdam lakes, are allocated to General Recreation.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Rocky Mountain Forest Reserve and C3/CO1 Forest Management Unit boundaries
Planning Area Boundary
Patent Land
BLAIRMORE
Bellevue
Hillcrest Mines
Lees Lake
Tp. 7
Tp. 6
Tp. 5
PINCHER CREEK
BEAVER MINES
BEAUVAIS LAKE PROVINCIAL PARK
Beaver Mines Lake
Carbondale
Castle River
West Castle
Pincher Creek
Indianfarm Creek
Waterton River
Belly River
BRITISH COLUMBIA
FIFTH MERIDIAN
WATERTON LAKES NATIONAL PARK
Waterton Lakes
Maskinonge Lake
Blakiston
Cameron Creek
R. 30
R. 29
R. 28
R. 27
R. 3
R. 2
3
507
510
774
6
800

Fig. 2: REFINED EASTERN SLOPES ZONING

4.1 Implications of Eastern Slopes Policy Zoning Refinement

Refinement of the Eastern Slopes Policy zoning has major implications for the management and administration of natural resources within the Castle River area. These are identified as follows:

Watershed:

1. The Castle River area receives the highest annual precipitation and snowfall in the Eastern Slopes region. The Eastern Slopes Policy states watershed protection and management are the highest priorities. The Castle River plan subsequently ensures these priorities are recognized regardless of zoning. Watershed protection and management are key considerations in all zones.

2. The Prime Protection Zone protects important high snowfall areas and slopes where soils are thin and vegetation is slow to recover from disturbances.

3. Erosion potential is highest in alpine and sub-alpine areas where slopes are excessive and vegetation growth is slow and sensitive to disturbance. Land-use activities will subsequently be concentrated along lower slopes and valleys where erosion potential is relatively lower but still of some concern. Increased involvement of watershed managers will be required in reviewing operating plans and resource development applications to ensure the plan's watershed management objectives are met.

Recreation:

1. The 1977 Eastern Slopes Policy identified the importance of the Castle River area for recreation. Recreation has been confirmed as a priority in the Eastern Slopes region in the revised Eastern Slopes Policy. The refined Eastern Slopes zoning in the Castle River plan has identified a land base for both extensive and intensive recreation opportunities. The resource base of these areas will consequently be managed for this major use at an operational resource management level.

2. Within the General Recreation Zone it is recognized that the priority will be for a variety of recreation activities associated with the natural setting. Other resource activities will

occur where the impacts on the visual aesthetics and recreation use can be minimized. This will require closer liaison among recreation managers and other resource managers and operations.

3. The North and Middle Kootenay passes and the MacDonald Creek Pass have been traditionally used in association with many recreational pursuits. They have consequently been designated as recreation access corridors in the plan and the refined zoning reflects this intent. Because the Middle Kootenay and North Kootenay occur in the alpine and subalpine respectively, there is potential for environmental impact if use is not carefully monitored and controlled. Provisions have been made in the plan for this to occur. Use of these passes also have implications for resource management agencies in British Columbia. Consultation on a continuing basis with officials in British Columbia will be required to ensure resource management objectives on both sides of the border are achievable.

4. Waterton Lakes National Park is situated immediately south of the Castle River area. The zoning configuration for the South Castle Valley consists of a General Recreation Zone. The subalpine reaches of Sheep Creek, the upper South Castle and Font Creek included in this designation are nearest to the park. Consultation with Parks Canada officials will be required to ensure that resource management objectives for the South Castle and Waterton Lakes National Park are achievable at operational management levels.

Fisheries and Wildlife:

1. The revised Prime Protection and Critical Wildlife Zone boundaries ensure protection of headwater areas on Gardiner Creek and Syncline Brook, which were previously included in General Recreation. Restriction of vehicle access in these areas will reduce the potential for erosion, and consequent sedimentation and degradation of fisheries habitat in these areas will reduce the potential for erosion and consequent sedimentation and degradation of fisheries habitat in these water courses.

   Addition of Critical Wildlife Zone on the headwaters of Gardiner and Syncline creeks recognizes the presence of key summer range for bighorn sheep and mountain goats and ensures that the value of these ranges will not be reduced by other resource activities and developments.

2. The revised General Recreation Zone in the South Castle Valley could potentially increase vehicular access into the area. This activity may increase potential for erosion and consequent sedimentation and degradation of fisheries habitat in these water courses. Greater access may also reduce range security for bighorn sheep, mountain goats, cougar, grizzly and black bear, elk and mule deer. Existing population levels in the area may consequently become difficult to maintain because of increased harassment.

3. Expansion of Prime Protection Zone to include alpine areas between Gladstone, Mill and Whitney creeks ensures the retention of these areas in a natural state. This condition is essential in order to retain range for elk and sheep plus other key species, such as grizzly bear, which frequent these drainages.

4. Expansion of Critical Wildlife Zone to include Maverick Hill and Hastings Ridge, as well as fluvial deposits along the Carbondale and Castle rivers, will ensure enhanced protection of critical elk and deer winter range. Winter range for approximately 300 elk as well as mule deer, plus range for a variety of other species including cougar and bear, is recognized by this zoning.

5. Replacement of the General Recreation Zone by Critical Wildlife Zone designation along the South Castle River, south of Whistler Mountain, recognizes the critical summer range of elk and sheep in this area. This designation allows for control and modification of development activities to ensure continued use of this range by ungulates.

6. Replacement of General Recreation Zone by Critical Wildlife Zone along the Front Range in the valleys of Yarrow, Spionkop, Drywood and Pincher creeks has emphasized the value of these areas as some of the best winter range for bighorn sheep in the province. This zoning will ensure that these winter ranges as well as other wildlife values will be of primary concern when considering future land uses in these areas.

7. The Front Range creeks have significant trout fisheries. Critical Wildlife Zone designation of these valleys will help to ensure that watershed values in headwaters of these trout streams will be protected.

8. Retention of a Critical Wildlife Zone classification on Crown lands east of the Rocky Mountain Forest Reserve recognizes the value of these lands to wintering mule deer, elk and other species. This designation should allow for future use of these areas to assist in solving crop depredation problems caused by ungulates moving into this area to winter.

Minerals:

The implications of the plan's implementation on mineral resource exploration and development are outlined by resource management area.

Range:

1. Grazing is a restricted activity in both the Critical Wildlife Zone and General Recreation Zone. At this time no reductions in stocking capacities or deletions from the grazing land base have been identified. Range improvements may be considered in these zones but it must be recognized that the productivity resulting from improvements may be affected by specific restrictions developed to protect wildlife and recreation values. Absolute increases in stocking capacities over levels set in 1977 can not be determined because these restrictions will be prepared on an operational basis as range improvements are considered. The 1 120 animal unit months of additional grazing is a target value to be achieved subject to the success of range improvements and informal use of cutovers.

Timber:

1. The gross area of the forest land base (Zones 2, 4 and 5 less lands under recreation reservation) decreased from the Eastern Slopes Policy zoning when compared to the refined zoning of the Castle River plan. In 1977, the land base was estimated at 62 095 ha (153 435 a.). The refined land base is currently estimated at 54 396 ha (134 411 a.). The productive land area, from which the annual allowable cut is derived, is currently estimated at 49 889 ha (123 174 a.). The refined zoning of the Castle River plan has accounted for recreational needs and provides the land base required to achieve sustained-yield timber management objectives.

2. No significant deletions from the forest land base are required to achieve other resource objectives. To ensure wildlife and recreation objectives are achieved, particularly in the Critical Wildlife Zone and General Recreation Zone, modifications of normal operating guidelines will be required.

3. As a result of the major fire in 1936 and the mountain pine beetle infestation, the annual allowable cut will be negligible for the next 40 to 60 years. It is anticipated that a long-term sustainable annual allowable cut will be sufficient to meet industrial and local demands. Amalgamation of the C3-FMU with the C1 and C2-FMUs will allow for the removal of overmature and decadent stands of timber.

5. RESOURCE MANAGEMENT AREAS

Resource management objectives are not uniformly applicable throughout the Castle River area. Five geographical areas, demonstrating individually distinct resource management intents, were identified in the planning process. These resource management areas were distinguished on the basis of present use and demand for each resource, the potential for future resource development, ecological landscape characteristics and agency resource management objectives. The resource management area intents are consistent with the direction given by the Eastern Slopes Policy and subsequent "Castle River Resource Management Policy" (Alberta, 1982). Broad direction to land-use allocation within the resource management areas is facilitated by the Eastern Slopes zoning designation. The management intents, objectives and guidelines presented in this section for each resource management area provide a more detailed framework for decision-making.

The intent of each resource management area (Figure 3) is outlined as follows:

Area A: Carbondale River-Lynx Creek

The primary intent is to allow for utilization of the full range of available resources within a multiple-use context.

Area B: O'Hagan-Adanac

The primary intent is to protect critical wildlife habitat.

Area C: Castle-Carbondale Corridor

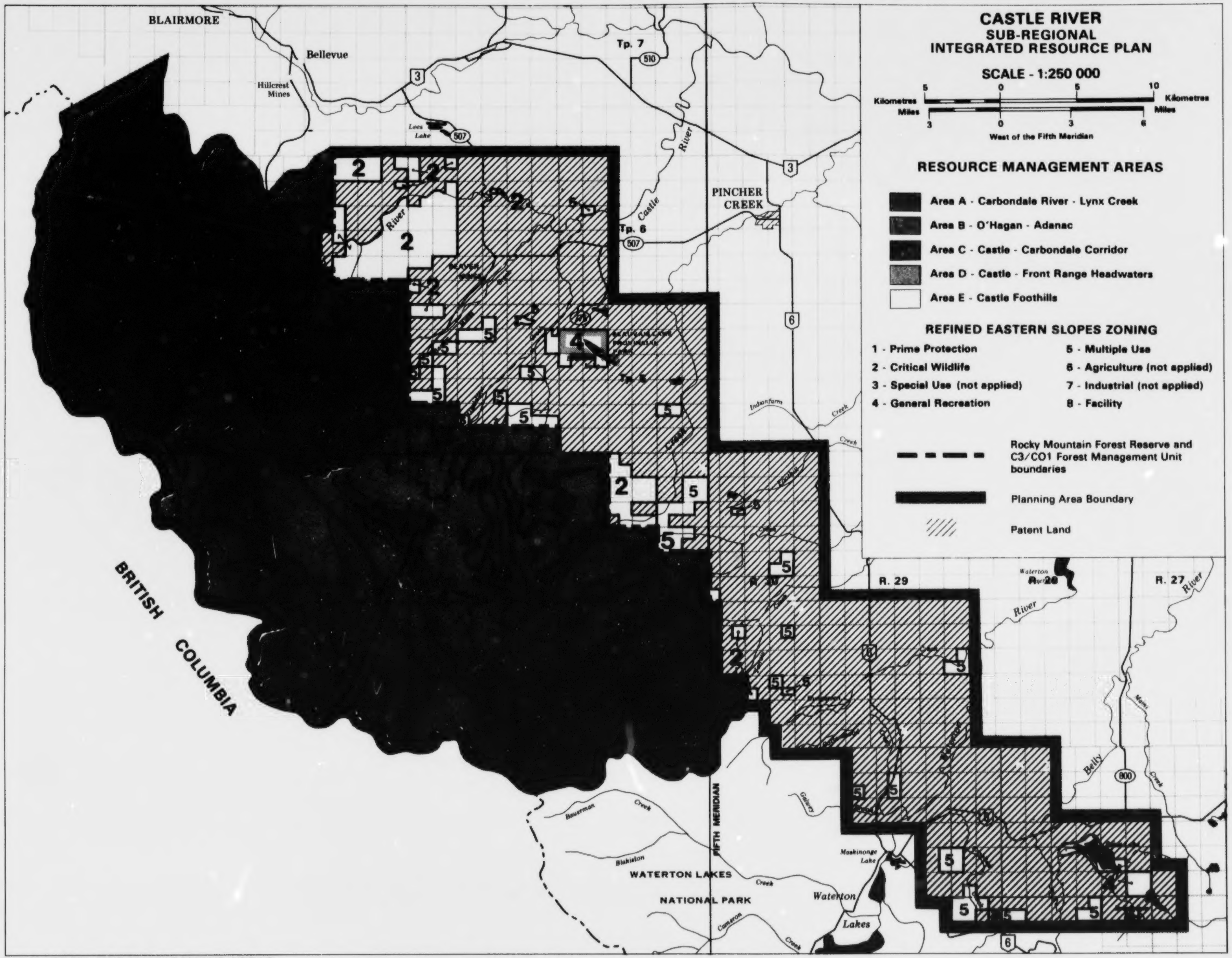
The primary intent is to provide for a diverse range of tourism and intensive recreation opportunities that are consistent with the maintenance of the natural environment.

Area D: Castle-Front Range Headwaters

The primary intent is to provide for a wide range of extensive recreation opportunities.

Area E: Castle Foothills

The primary intent is to maintain and manage the forage resource for use by domestic livestock and wildlife.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Castle River
River
Indianfarm Creek
BRITISH COLUMBIA
R. 30
R. 29
R. 28
R. 27
Waterton River
Belly River
FIFTH MERIDIAN
Bauerman Creek
Blakiston Creek
Cameron Creek
WATERTON LAKES NATIONAL PARK
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Waterton Lakes
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Fig.3: RESOURCE MANAGEMENT AREAS

For each resource management area, the primary management intent statement gives an overview of the management emphasis for the area. These intent statements provide a base from which resource management objectives and guidelines have been determined. Resource uses will be permitted in a resource management area within the context of the refined Eastern Slopes zoning and the primary intent. Guidelines presented in this plan and in subsequent operational plans[2] and referrals will provide direction toward the resolution of resource management issues.

Although the resource management areas provide direction as to the management intent for different parts of the Castle River area, it is anticipated that resource management agencies will continue to administer operations and to plan for resource development using traditionally accepted administrative units such as forest management units (FMUs) and wildlife management units (WMUs).

In the Castle River area, conflicting resource management objectives and intents can be mitigated through a number of resource management guidelines[3]. The discussion of objectives and guidelines for each of the resource management areas has been organized by resource, so that all of the information required by a resource manager is presented under the heading of a particular resource. Several resource management guidelines are not specific to individual resource management areas but have common application throughout the planning area. These broad resource management guidelines are listed below.

1. Alberta Environment will monitor water yield and quality in the planning area to ensure the maintenance of a high-quality water resource.

2. Land or resource uses that may alter water quality, quantity and flow regime of surface water and groundwater should be brought to the attention of Alberta Environment so that adverse impacts on the water resource can be assessed and co-operatively minimized in conjunction with the Alberta Forest Service.

3. Fluctuations in water yield and stream flow will be minimized. This will be achieved by adherence to operating restrictions on timber harvesting and existing forest protection policies.

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[2], [3] See Glossary for definition.

4. Stream crossings will be minimized to lessen point sources of sedimentation.

5. Land-use activities and operations must be located in areas that will minimize potential soil erosion.

6. Reclamation of land-use disturbances will occur expeditiously to reduce erosion and sedimentation.

7. Proposals for other resource uses must recognize the recreation priority in the planning area. Particular care in resource development will be required in areas with close proximity to existing and potential recreation sites.

8. Alpine lakes should be managed according to the Fish and Wildlife Division's "Alberta High Mountain Lakes Fisheries Management Program" (Alberta, 1979). This will require co-ordination with the Alberta Forest Service to manage access and use around these lakes.

9. a) Resource uses in the Castle River area that will result in land surface disturbance may require Historical Resources Impact Assessments prior to development.

   b) The Archaeological Survey of Alberta, Resource Management Section, will participate in the land use referral process by reviewing proposed development projects within those areas considered to have high historical resources potential. These areas are outlined by resource management area.

10. All proposals for coal exploration and development must be processed in accordance with A Coal Development Policy for Alberta.

11. Range improvement will be essential to maintain the long-term forage productivity of the primary range. It is necessary to conduct range improvement to counteract the steady decline in productivity resulting from brush encroachment and deletions from the land base. Range allotment assessments are required so that the most appropriate action can be implemented to prevent further decreases in stocking capacities.

12. Canada No. 1 Certified Seed will be used during range improvement and the reclamation of disturbed sites in the Castle River area to ensure exotic weed species are not introduced as a result of these activities.

13. The feasibility of increasing stocking capacities will depend on the success of range improvements. Stocking capacities will not be increased until the productivity of the primary range has been improved to maintain increased capacities.

14. Grazing use will continue in accordance with existing range management plans. However, updating of management plans will begin to include new techniques (range improvements, short-term use of cut blocks, etc.) to optimize use of increased forage.

15. Range improvement plans and range management plans will be developed in a manner that is consistent with maintaining the recreation, fisheries, wildlife and timber values of the area. Long-term increases in grazing capacity over the 1977 level currently held will be specifically assessed to ensure consistency with these resource values.

16. The informal use of recently-logged areas as temporary range will be encouraged. However, cattle use of the cutblocks will be phased and controlled to ensure coniferous regeneration is given priority and is not impeded. As cutblocks will be considered temporary range only, they will not be used in long-term calculations of carrying capacity. Grazing on cutblocks will provide short-term supplement for productivity losses due to brush encroachment on the primary range.

17. Salvage logging of merchantable stands will continue. Non-merchantable stands of infested pine will be assessed for reforestation and fuel modification purposes.

18. Continued productivity of the forest land base (54 396 ha or 134 411 acres) will be ensured through:
    -- intensive forest management techniques;
    -- reclamation of surface disturbances;
    -- reforestation of harvested stands according to established reforestation policy.

    The forest land base consists of lands designated Critical Wildlife, General Recreation and Multiple Use, except for those areas under recreation area reservation.

19. Timber harvesting will be conducted aesthetically in accordance with the "Timber Harvest Cut Block Design Manual" (Alberta, undated).

20. Sanitation logging will occur where required, following an analysis of potential environmental impacts by management agencies.

21. Reclamation of disturbed sites will continue with emphasis on these sites in the Prime Protection Zone. Consideration for priority should be given to trails in the South Castle, and North and South Lost Creek valleys (estimate 18.5 km or 11.5 mi).

22. Alpine terrain should be managed by the Alberta Forest Service in co-operation with the Fish and Wildlife Division to ensure the protection of wildlife and other environmental factors.

23. Opportunities for trapping will be maintained but must not affect the overall distribution and abundance of furbearers.

24. Multiple-purpose access should be considered where possible in the development of operational activities.

25. Existing access should be used as much as possible in the development of operational activities.

26. All operational activities must be processed in accordance with procedures set out in internal referral systems of the Alberta government; for example, "Internal Referral Systems of Alberta Energy and Natural Resources".

5.1 Carbondale River-Lynx Creek Resource Management Area A

The primary intent of the Carbondale River - Lynx Creek resource management area (Figure 4) is to allow for utilization of the full range of available resources within a multiple-use context.

Notwithstanding the primary intent, the alpine terrain along the Continental Divide has been zoned Prime Protection (Zone 1) in accordance with the Eastern Slopes Policy to protect watershed values and high alpine terrain. Land-use activities in Zone 1 are directed by the activity matrix (Table 1) in the Eastern Slopes Policy with further direction (particularly to recreation plans) provided by the guidelines contained in this section.

The remainder of the Carbondale River-Lynx Creek has been zoned for multiple use. The allocation of resource uses to specific

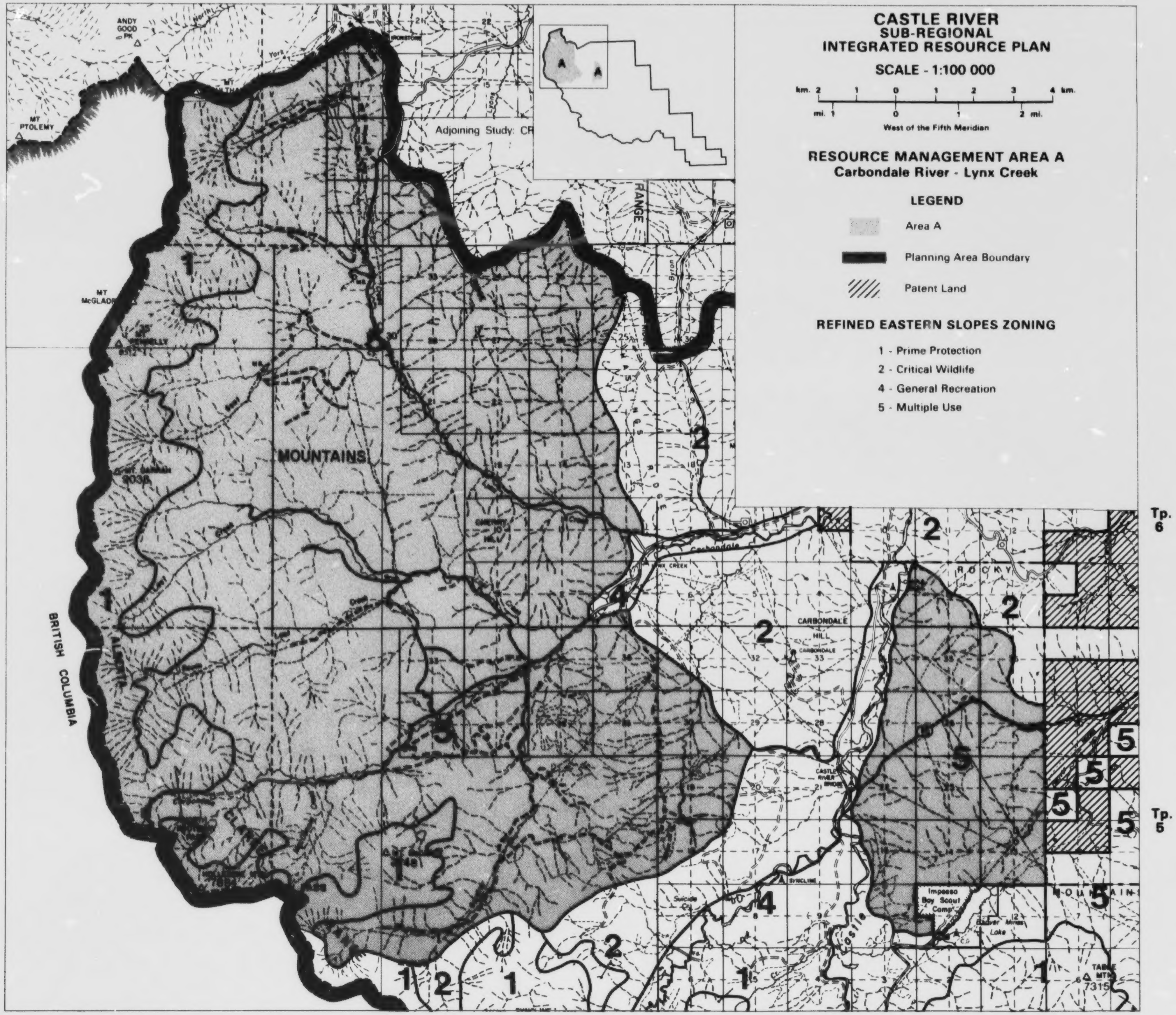
CASTLE RIVER
SUB-REGIONAL
INTEGRATED RESOURCE PLAN
SCALE - 1:100 000
km. 2 1 0 1 2 3 4 km.
mi. 1 0 1 2 mi.
West of the Fifth Meridian
RESOURCE MANAGEMENT AREA A
Carbondale River - Lynx Creek
LEGEND
Area A
Planning Area Boundary
Patent Land
REFINED EASTERN SLOPES ZONING
1 - Prime Protection
2 - Critical Wildlife
4 - General Recreation
5 - Multiple Use
A
A
Adjoining Study: CR
ANDY GOOD PK
MT PTOLEMY
MT McGLADREY
MOUNTAINS
BRITISH COLUMBIA
ALBERTA
RANGE
Carbondale
LYNX CREEK
CARBONDALE HILL
CASTLE RIVER
SYNCLINE
Suicide
Castle
Impeeso Boy Scout Camp
Beaver Mines Lake
ROCKY
MOUNTAIN
TABLE MTN 7315
Tp. 6
Tp. 5
1
2
4
5

Fig. 4: CARBONDALE RIVER - LYNX CREEK RESOURCE MANAGEMENT AREA

R.3 R.2

lands within Zone 5 is based on the capability of the land to sustain levels of use, the present use of and demand for each resource, the potential for future development, and the objectives and policies of the resource management agencies. The Carbondale River-Lynx Creek multiple-use management intent signifies that this portion of the planning area will facilitate industrial activity and resource development. Resource management within this area, however, will be consistent with the maintenance of recognized environmental standards for the protection of watershed values throughout the area, and wildlife values especially within the subalpine adjacent to Prime Protection Zone. North Kootenay Pass occurs in the subalpine. This factor along with recreation demand for the maintenance of a travel corridor has resulted in its designation as Zone 5. Management direction for allocating land for specific resource uses is provided by the objectives and guidelines in this section of the document.

In each resource management area the resources are listed by priority when assignable; otherwise they appear alphabetically. Within the Carbondale River-Lynx Creek resource management area watershed has been listed first as it has been identified as a paramount resource by the Eastern Slopes Policy. The remainder of the resources have been listed alphabetically to reflect the multiple use intent for the area.

Watershed

The Carbondale River-Lynx Creek resource management area includes headwater sources and provides high water yields. Previous resource extraction activity (primarily timber harvesting) and the current use of the developed access by motorized recreational vehicles have contributed to some accelerated erosion. Carbondale River and Goat and Lynx creeks have fair stream channel stability.

Resource Management Objectives

1. To correct erosion or sedimentation problems resulting from past industrial development and present recreation use.

Resource Management Guidelines

1. All areas disturbed by land-use activities will be rehabilitated through reforestation and/or reclamation.

2. Motorized recreation trails which cause erosion will be rerouted or rehabilitated.

Fisheries

The Carbondale River-Lynx Creek resource management area contains the most productive trout streams found within the planning area. Protection of water-yield areas along the Continental Divide within this resource management area is vital to the continued productivity of these streams. Past logging activities and subsequent use of associated access by recreation users have affected flow regimes and silt loads in some of the streams. Increased channel stability should be promoted in operational plans.

Resource Management Objectives

1. To maintain and, where possible, to enhance the diversity and productivity of sport fishing opportunities.

2. To maintain and, where possible, to enhance salmonid populations.

Resource Management Guidelines

1. Increased pressure for fishing may require changes to fishing regulations. These changes may include shorter seasons and various catch restrictions.

2. Fish and Wildlife Division will participate in the normal referral process and review operational plans to provide operating conditions that will ensure protection of aquatic habitat.

3. Fish and Wildlife Division should assess streams for habitat improvement capabilities and habitat development programs should be identified.

Historical Resources

Historical resource inventories have not been conducted in the Carbondale River-Lynx Creek management area. There is considerable potential, however, for the discovery of prehistoric and historic sites. The North Kootenay and MacDonald passes provide major access between the Kootenay and Upper Oldman drainage systems. These were undoubtedly used in prehistoric times, and sites may be present at their summits and along east and west approaches. The presence of usable high-elevation plant and animal resources would have been additional incentives for the prehistoric use of the area. Locations with considerable potential include alpine meadows, terraces above streams and rivers, lakeshores and areas where stone suitable for tool manufacture is exposed on the surface. Prehistoric occupation of the area may date back more than 12 000 years. It is also anticipated that the area contains the remains of sites relating to early ranching, coal mining and forestry activity. One historic coal mine occurs in the area.

Areas of high palaeontological potential exist along stream and river banks and in areas of rock exposure above the tree-line in Prime Protection (Zone 1).

Resource Management Objective

1. To protect historical resources from potential or actual damage by future resource developments; and to conserve these resources for future generations.

Resource Management Guidelines

1. The Archaeological Survey of Alberta, Resource Management Section will participate in the land use referral process for resource developments proposed in the following areas of high historical resource potential:
   a) Lands adjacent to Beaver Mines Lake, tributaries of the Castle River and Beaver Mines Creek, and the Lynx, Goat, Lost, South Lost, MacDonald and Gardiner creeks and their tributaries.
   b) The North Kootenay and MacDonald passes.
   c) Portions of Sections 36-5-4-W5 and 31-5-3-W5 found within the management area (Historic Coal Mine).

Minerals

There is excellent potential for coal development along Willoughby and Hastings ridges. In this vicinity more than half of the Crown's coal rights are under disposition. The numerous Kootenay formation coal seams which underlie this area are considered part of the extensive Coleman and Blairmore coal fields. Forty-five megatonnes (49.6 million short tons) -- 42.6 surface and 2.4 underground -- of the medium-volatile bituminous coal reserves are recoverable using current mining technology. No mining is taking place but companies have been active in the area, drilling test holes and studying the feasibility of mine and access construction.

Two-thirds of the resource management area has petroleum and natural gas dispositions, but only two wells have been drilled. One well was drilled in the eastern portion of the resource management area and was abandoned without testing. The attempt was to define further the productive formations of the adjacent Waterton gas field. The other well was drilled near the Alberta-British Columbia border, where indications of gas from the Mississippian zones were tested before abandonment. With only two abandoned wells within the resource management area, insufficient work has been conducted to determine the area's hydrocarbon potential.

Quarriable and metallic minerals are not of commercial interest in this resource management area. There are no identified deposits, no prospecting or mining activities and no exploration or development dispositions.

Resource Management Objectives

1. To provide opportunities for industry to explore the entire sedimentary section for petroleum and natural gas throughout the Multiple Use Zone within the resource management area.

2. To permit industry to define the volume and extent of the Rundle and Wabamun gas pools as they relate to the productive geological structures[4] of the Waterton gas field and to recover this resource.

3. To provide opportunities for industry to explore and develop the coal reserves within the resource management area exclusive of Coal Policy Category 1 lands.

Resource Management Guidelines

1. Guidelines applicable to mineral resource activities are included in the introductory section of Chapter 5, Resource Management Areas.

2. All exploration and development activities for petroleum, natural gas, coal and other minerals in a two-kilometre buffer of subalpine adjacent to Prime Protection Zone will be conducted in a manner consistent with the protection of wildlife and landscape values.

Range

The primary rangelands are stocked to the carrying capacity allowed by the present level of management. Stocking levels could be increased with more intensive management to encourage use of secondary range. Since 1960, there has been a decrease in the level of use by approximately 150 animal unit months. It is expected that the salvage logging of stands killed by mountain pine beetle will produce sufficient forage to compensate for losses due to brush encroachment over the past 20 years. However, the use of this forage will be short-term until conifers mature; consequently, logged sites will not form part of the primary range which is used to determine carrying capacity.

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[4] See Glossary for definition.

Resource Management Objectives

1. To maintain, as a minimum, the 1977 stocking level of 808 animal unit months currently held.

2. To reverse the current trend of reducing stocking capacities on primary range by encouraging use of newly-logged areas.

3. To review range management practices and the potential for increased forage production to determine the feasibility of increasing the stocking capacity by approximately 150 animal unit months.

Resource Management Guidelines

1. Operational range management plans will be updated to include additional secondary range created through logging into a system of use. Cattle will be encouraged to use these areas through more intensive management.

2. Forage production increases available to domestic livestock (due to logging) must be quantified to complete revisions of operational plans.

3. Research into the feasibility of increasing productivity on logged areas for domestic grazing and wildlife should be encouraged. Emphasis should be on developing techniques that would reduce invasion of brush and non-palatable species while encouraging retention of grasses. However, it must be recognized that the priority of these sites is for coniferous regeneration, consequently future enhancement of forage productivity must not impede growth of coniferous stock.

4. It is recognized that random camping and off-highway vehicle use in this area are detrimental to the production of forage on the primary range. Levels of random camping and off-highway

vehicle use fluctuate somewhat with stream closures for fishing in the Carbondale drainage. Therefore, consideration should be given to conducting range improvements (e.g., aerial seeding) in years coinciding with stream closures. This would help to maintain forage production that would be available as cutblocks mature with coniferous cover. This type of range improvement would have to be co-ordinated with public education programs for recreation users.

Recreation

Hunting and fishing are significant recreational pursuits in the Carbondale River-Lynx Creek resource management area. The Carbondale watershed is open for fishing in years alternate to the Castle watershed. This results in fluctuating demands for recreational facilities. Random camping use is high and some sites show adverse environmental impacts. Development of access in the past and the current mountain pine beetle infestation and decadent timber have reduced the visual aesthetics of this resource management area. However, the proliferation of access routes is an asset for off-highway vehicle use and the primary recreation intent is to manage off-highway vehicle use effectively. The Great Divide Trail (for hiking and equestrian use) will also traverse this resource management area.

Resource Management Objectives

1. To manage off-highway vehicle recreation and random camping activities.

2. To provide for fishing, hunting and camping requirements.

3. To manage the development and use of non-motorized trails.

4. To co-ordinate the development and maintenance of industrial access to complement recreation trail systems.

5. To preserve the integrity of the proposed Great Divide Trail route.

Resource Management Guidelines

1. Improvement of visual qualities and control of vehicular use of trails should be considered in developing reclamation plans.

2. Closure or rehabilitation of random sites is to be co-ordinated with involved agencies.

3. Trail planning in the vicinity of alpine lakes must recognize fisheries concerns.

4. Road improvements proposed by Alberta Transportation over Willoughby Ridge may lead to an increased demand for day-use facilities. This should be assessed.

Timber

Much of this resource management area was logged in the late 1930s and early 1940s. Recently, many of these older cutblocks have been reforested to meet improved standards legislated in 1966. However, problems have been encountered on 800 ha (1 977 a.) on steep slopes where competition from colonizing species impedes establishment of seedlings. Cutblocks harvested since 1966 have been reforested. The timber now remaining in the reserve blocks of the area is primarily decadent, overmature and mature white spruce and balsam fir, with a minor volume of pine.

Resource Management Objectives

1. To harvest the remaining mature and overmature timber (approximate volume 132 770 m^3 or 4 690 mcf).

2. To continue reforestation on steep slopes harvested prior to 1966. Reforestation of areas cut since 1966 will continue according to existing Alberta Forest Service regulations.

3. To ensure reclamation of roads as timber licences in the area expire.

Resource Management Guidelines

1. This is the priority area for harvesting over the short term because of the high component of decadent and overmature timber. The cutting sequence will have to accommodate removal of the decadent timber as efficiently as possible to maximize the merchantable value. However, the cutting sequence will also have to provide for protection of watershed and recreation values and for the maintenance of adequate cover for wildlife on the summer subalpine range. Therefore, approximately 50 per cent of the merchantable volume may be harvested for any given cut.

2. Reclamation of roads will be co-ordinated with providing recreation access. Priorities for reclamation should consider roads in the upper valleys of the tributaries to the Carbondale River.

Wildlife

The Carbondale River-Lynx Creek resource management area provides an extensive area of summer range for moose, elk and mule deer. These animals winter in the foothills. The best summer range for elk and mule deer within the management area occurs in the subalpine immediately adjacent to the Continental Divide. During the summer, alpine areas contain significant numbers of bighorn sheep and mountain goats. No winter range for sheep or goats has been identified. However, there is a possibility of winter use by these species in the management area. Timber harvesting can play an important role in improving ungulate summer range. Extensive off-highway vehicle use has a negative effect on ungulate abundance and distribution.

Resource Management Objectives

1. To maintain and, where possible, to enhance the distribution, diversity and quality of wildlife habitat.

2. To increase the opportunity for wildlife to use available habitat.

3. To optimize the opportunity for consumptive and non-consumptive uses of wildlife resources.

4. Sheep -- To maintain 250 summer animal unit months.
   Goats -- To maintain 400 summer animal unit months.
   Elk -- To maintain 1 960 summer animal unit months.
   Mule Deer -- To maintain 3 780 summer animal unit months.
   White-Tailed Deer -- To maintain 700 summer animal unit months.
   Moose -- To maintain 630 summer animal unit months and 100 winter animal unit months.

Resource Management Guidelines

1. Hunting regulations will be subject to the current Fish and Wildlife Division review process. Various management procedures will be implemented as conditions warrant.

2. The Fish and Wildlife Division should identify areas suitable for wildlife habitat developments and improvement with the intent of increasing habitat diversity for all wildlife species.

3. Closure of access that is not required for industrial purposes should be determined by the Fish and Wildlife Division in conjunction with the Alberta Forest Service if this access leads into headwater areas significant for wildlife habitat.

4. Subalpine areas adjacent to Prime Protection Zone should be managed to maintain wildlife values. This will require special care in forest-cutting operations and other resource extraction activities.

5. Harvesting of overmature timber will occur within this resource management area. These sites provide significant habitat for several wildlife species. Standard operating ground rules for timber harvesting may require modification to ensure wildlife values are adequately considered.

5.1.1 Implications of Resource Management Actions

The major implications of resource management actions proposed for the Carbondale River-Lynx Creek resource management area are as follows:

Fisheries and Wildlife

1. Reclamation of previously disturbed lands and reclamation of trails in headwater areas will help to reduce sediment loads in watercourses, thereby enhancing fisheries values. Reclamation of trails will also help to limit motorized access which result in reduced harassment of wildlife and increased security for wildlife populations.

2. Potential for coal development currently exists on Willoughby Ridge. Development of the coal reserves in this area will have an impact on summer elk and deer range and will improve access. This could lead to decline in ungulate populations through reduced carrying capacity, harassment and increased harvest.

3. Should development of gas reserves along the Continental Divide occur, it could seriously conflict with objectives to reclaim

access into headwater areas. New access near the Prime Protection Zone boundary could significally impact key ungulate summer range use, mainly as a consequence of increased vehicular traffic.

4. Use of range improvement on secondary range combined with maintenance of current stocking rates should, with proper cattle management, reduce livestock-induced erosion problems occurring along streams.

5. Management of off-highway vehicle use in this resource management area could help to reduce wildlife harassment and erosion problems. In addition, control of snowmobile use through development and enforcement of a planned trail system could help to prevent displacement and harassment of wildlife on winter range.

Minerals

1. Only the Zone 1 area excludes mineral activities and, since it has not changed significantly from the 1977 configuration, there should be no additional effects on mineral development opportunities in this resource management area. The subalpine areas may be the only exception where, for wildlife protection reasons, mineral activities may be restricted.

Rangeland

1. There are no zoning restrictions in the resource management area that affect grazing. However, productive capacity is low, so the potential for increasing capacities is only marginal.

Recreation

1. Recreation is not a priority in this resource management area since capability is relatively low. Off-highway vehicle use will consequently be encouraged as this use is compatible with the multiple-use intent for the area. Recreation trail use will have to be co-ordinated with other uses to ensure compatibility. The design of a trail system will therefore require flexibility to adapt to temporary and permanent closures.

Timber

1. All of the merchantable timber in the resource management area is contained in the Multiple Use Zone. However, it is

recognized that within the Multiple Use Zone the subalpine areas are important wildlife habitat which will require the modification of standard operating ground rules but no significant long-term deletions from the timber land base.

2. As the priority for this area is Multiple Use, it should be the focus for long-term timber production.

5.2 O'Hagan-Adanac Resource Management Area B

The primary intent of the O'Hagan-Adanac resource management area (Figure 5) is to protect critical wildlife habitat. All of this area has been zoned Critical Wildlife (Zone 2). Land-use activities will ensure that the wildlife management priorities are recognized and maintained. The allocation of resource uses to specific lands within this resource management area is based upon the mitigation of conflicts between wildlife and other resource uses. The direction provided by the Eastern Slopes Policy activity matrix (Table 1) is further refined by the objectives and guidelines provided in this section.

Within the O'Hagan-Adanac resource management area, watershed has been listed first as it has been identified as a paramount resource by the Eastern Slopes Policy. Wildlife is listed second to reflect the resource management area's intent for the protection of critical wildlife habitat. The remainder of the resources have been listed alphabetically.

Watershed

The O'Hagan-Adanac resource management area does not produce significant amounts of water within the Castle River area. The area has low winter snowpack and does not contain important headwaters. O'Hagan Creek is the only major permanently flowing stream. Localized erosion does occur in some areas.

Resource Management Objective

1. To correct erosion problems resulting from access development or off-highway vehicle use.

Resource Management Guideline

1. Problem areas will be monitored and mitigative action will be implemented as required to minimize soil erosion.

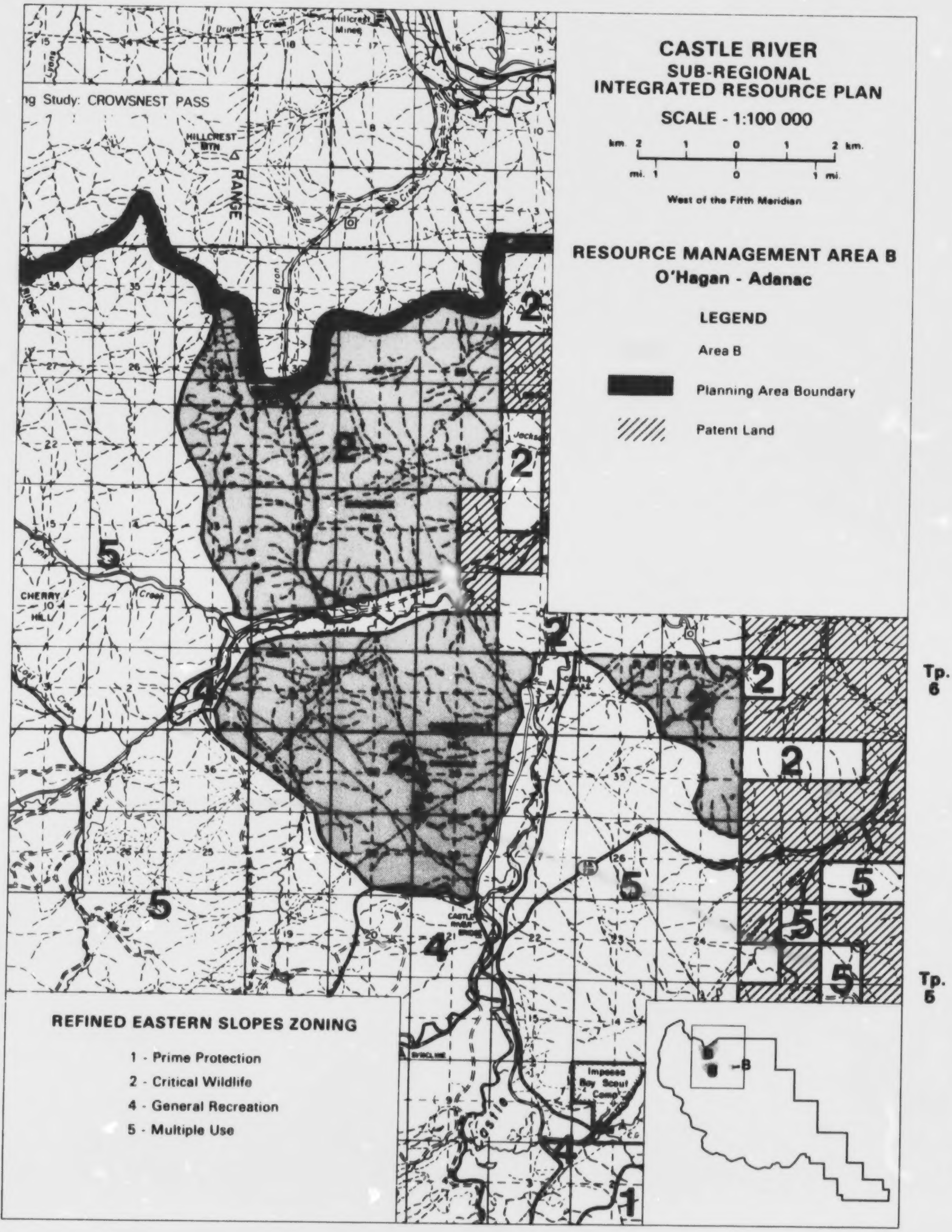
CASTLE RIVER
SUB-REGIONAL
INTEGRATED RESOURCE PLAN
SCALE - 1:100 000
km. 2 1 0 1 2 km.
mi. 1 0 1 mi.
West of the Fifth Meridian
RESOURCE MANAGEMENT AREA B
O'Hagan - Adanac
LEGEND
Area B
Planning Area Boundary
Patent Land
REFINED EASTERN SLOPES ZONING
1 - Prime Protection
2 - Critical Wildlife
4 - General Recreation
5 - Multiple Use
ng Study: CROWSNEST PASS
HILLCREST MTN
RANGE
Hillcrest Mines
Drum Creek
CHERRY HILL
Byron Creek
CASTLE RIVER BRIDGE
Impeesa Boy Scout Camp
Castle
Tp. 6
Tp. 5
R.4
R.3
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Fig. 5: O'HAGAN - ADANAC RESOURCE MANAGEMENT AREA

Wildlife

The O'Hagan-Adanac resource management area provides winter range for over one-third (300 elk) of the known elk population within the Castle River area. The area is important for mule deer, as well as a variety of other game and non-game species including bear and cougar. South- and southwest-facing grassy slopes and grassy flats along the Castle River provide key foraging areas for ungulates. Coniferous and deciduous stands provide necessary thermal and escape cover areas during winter.

Resource Management Objectives

1. To maintain and, where possible, to enhance the distribution, diversity and quality of wildlife habitat.

2. To increase the opportunity for wildlife to use available habitat.

3. To optimize opportunities for consumptive and non-consumptive uses of wildlife resources.

4. To maintain and, where possible, to improve critical ungulate winter range.

5. Elk -- To maintain 420 summer animal unit months and 1 250 winter animal unit months.
   Mule Deer -- To maintain 910 summer animal unit months and 2 200 winter animal unit months.
   White-Tailed Deer -- To maintain 490 summer animal unit months and 350 winter animal unit months.
   Moose -- To maintain 140 summer animal unit months and 200 winter animal unit months.

Resource Management Guidelines

1. Increased pressure for hunting may require changes to hunting regulations. These changes may include shorter seasons.

2. Fish and Wildlife Division should identify areas suitable for wildlife habitat development and improvement to increase habitat diversity for all wildlife species.

3. Co-operative range assessment studies by the Alberta Forest Service and Fish and Wildlife Division are required in this

resource management area to determine the extent of competition between cattle and wild ungulates for forage resources on winter range.

Historical Resources

Historical resource inventories have been conducted on a very limited basis within the O'Hagan-Adanac management area. Potential does exist for the discovery of prehistoric and historic sites. Buffered from the Carbondale and Castle River, the area has somewhat less potential for prehistoric sites than other management areas. The importance of the area for wintering ungulates, however, suggests that prehistoric sites associated with this resource may be present. Areas of greatest potential include terraces above permanent drainages, alpine meadows, lakeshores and exposures of stone suitable for tool manufacture. Prehistoric occupation in the area may date back more than 12 000 years. The area may also contain the remains of sites relating to early ranching, coal mining and forestry activity. Two twentieth century coal mine sites occur within the area.

Areas of high palaeontological potential exist along stream banks and rock exposures along ridges.

Resource Management Objective

1. To protect historical resources from potential or actual damage by future resource developments; and to conserve these resources for future generations.

Resource Management Guideline

1. The Archaeological Survey of Alberta, Resource Management Section, will participate in the land use referral process for resource developments proposed in the following areas of high historical resource potential:
   a) Lands adjacent to major tributaries of the Carbondale River.
   b) Lands bordering the headwaters of Screwdriver Creek.
   c) SW 1/4-9-6-3-W5M (Historical Coal Mine); 31-5-3-W5M (Historic Coal Mine); NW 1/4-33-5-4-W5M (Fire Tower).

Minerals

Significant reserves of medium- to high-volatile bituminous coal occur along the Hastings Ridge and Maverick Hill portion of the O'Hagan - Adanac resource management area. Of these Kootenay formation deposits, 39.4 megatonnes (43.4 million short tons) are surface minable and 12.6 megatonnes (13.9 million short tons) are extractable by underground methods. These reserves, which are mostly under dispositions, are part of the extensive Blairmore and Bellevue coal fields of Alberta. Although there are no active mines in the area, coal was previously extracted from 1942 to 1962 along Adanac Pass.

One-half of this area's petroleum and natural gas rights have been leased from the Crown. Although the eastern portion of the resource management area falls within the Waterton field, just south of a flowing gas well, the only well to be drilled was in the northern portion. This well encountered good shows of gas from the Wabamun Zone and has been capped for future tie-in to a gas collection system. The area around this well has good potential for additional natural gas development and would be considered an extension of the productive geological structures of the Waterton field to the southeast.

Quarriable and metallic minerals are not of commercial interest in this resource management area. There are no identified deposits, no prospecting or mining activities and no exploration or development dispositions.

Resource Management Objectives

1. To permit industry to define the volume and extent of the Rundle and Wabamun gas pools as they relate to the productive geological structures of the Waterton gas field and to recover this resource.

2. To provide opportunities for industry to explore the entire sedimentary section for petroleum and natural gas throughout this resource management area.

3. To provide opportunities for industry to explore and develop the coal reserves in this resource management area exclusive of Coal Policy Category 1 lands.

Resource Management Guidelines

1. Guidelines applicable to mineral resource activities are included in the introductory section of Chapter 5, Resource Management Areas.

2. In view of the significance of the O'Hagan-Adanac resource management area for the protection of elk and mule deer winter range, only underground development of coal reserves will be encouraged. However, surface mining may be considered on a

site by site basis by the Alberta Cabinet in response to a Preliminary Disclosure.

3. Restrictions on timing and extent of exploration activity, access control, and special reclamation standards will be necessary in order to minimize impacts on wildlife.

Range

In the O'Hagan-Adanac resource management area the primary range is located on Hastings Ridge and Maverick Hill and on the northeast slope of Carbondale Hill. Under existing levels of management the carrying capacity has been reached. Since 1960, there has been a reduction of grazing use by 220 animal unit months. Little salvage logging has been done that would provide suitable temporary range. Therefore, to maintain the committed level of use, range improvements will be required. Approximately 260 ha (640 acres) of mixed aspen-covered land has potential for improvement.

Resource Management Objectives

1. To maintain, at least, the 1977 stocking level of 560 animal unit months currently held.

2. To increase use by approximately 220 animal unit months, pending the success of range improvements.

Resource Management Guidelines

1. Range development plans for the North Carbondale distribution unit must be prepared for range improvement sites.

2. When improvements are completed, the management plan for the Castle Allotment must be revised to incorporate improved areas into the system of use. The productivity and use of improved areas must be assessed to determine the effect on achieving the objective of increasing the capacity by 220 animal unit months.

3. Range improvement and revised management plans will be co-ordinated with wildlife enhancement programs.

Recreation

Other than hunting, recreation activities in the O'Hagan - Adanac resource management area are currently low. There is potential for summer non-motorized trail development and limited summer motorized trail use (with no development of additional facilities).

Resource Management Objectives

1. To manage the area for non-motorized and limited summer motorized trail activities.
2. To manage the area for recreational hunting.

Resource Management Guidelines

1. Enforcement of off-highway vehicle-use restrictions will require legislative enactments. Enforcements may be necessary in the future due to critical winter wildlife habitat values.
2. Adequate hunting access will be maintained.
3. "Serviced camping" will only be permitted during summer months because of the area's importance as critical winter habitat for elk and other ungulates.

Timber

The timber within the resource management area is primarily pine and consequently the area has been seriously affected by the mountain pine beetle infestation. Most of the mature timber has been removed through salvage logging.

Resource Management Objectives

The broad timber resource objectives apply with no specific objectives for this resource management area.

Resource Management Guideline

1. Salvage timber harvesting plans will be developed in conjunction with Fish and Wildlife Division to ensure the integrity of the resource management area's critical wildlife habitat.

5.2.1 Implications of Resource Management Actions

The major implications of resource management actions proposed for the O'Hagan - Adanac resource management area are listed below:

Fish and Wildlife

1. If proposed development of petroleum and natural gas resources and coal reserves and associated access development occur, this

may lead to habitat loss and reduced security of critical winter range for ungulates in this resource management area. Controls on these resource uses will minimize impacts on wildlife.

2. Timber harvesting associated with mountain pine beetle damage has potential to enhance ungulate forage availability. Corresponding increases in ungulate numbers will depend on control and reclamation of logging access and restriction of off-highway vehicle use in and around clearcut areas.

Rangeland

1. This resource management area is zoned Critical Wildlife in which grazing is a restricted activity. In the current situation, no significant competition problems between wildlife and domestic grazing were identified. However, it is recognized that wildlife use of the range is the priority. Range improvement will have to be conducted in a manner that enhances wildlife habitat. Domestic use will have to be monitored to ensure competition does not affect range quality.

Recreation

1. Because of the high priority of winter wildlife habitat, recreation use will be restricted to activities that do not impinge on this resource.

Timber

1. Although this area is a Critical Wildlife Zone, all of it is included in the forest land base because there are no areas where harvesting will not be permitted. However, it can be expected that normal operating guidelines will have to be modified to ensure adequate thermal and escape cover essential on the critical wildlife area.

5.3 Castle-Carbndale Corridor Resource Management Area C

The primary intent of the Castle-Carbondale Corridor resource management area (Figure 6) is to provide for a diverse range of intensive recreation opportunities that are consistent with the maintenance of the natural environment. As indicated in the Eastern Slopes Policy, this area will provide access corridors and service nodes for people participating in extensive recreation activities in adjacent areas. As a consequence, this area has been designated as General Recreation (Zone 4) except for the Facility Zone (Zone 8) on the more developed lands of the West Castle Ski Area. The allocation of resource uses to specific lands in the resource management area is based upon protection of those areas with the highest-quality recreation potential. The broad framework for how this will be done is provided by the activity matrix of the Eastern Slopes Policy (Table 1). More specific direction is provided by the resource management guidelines outlined for this area.

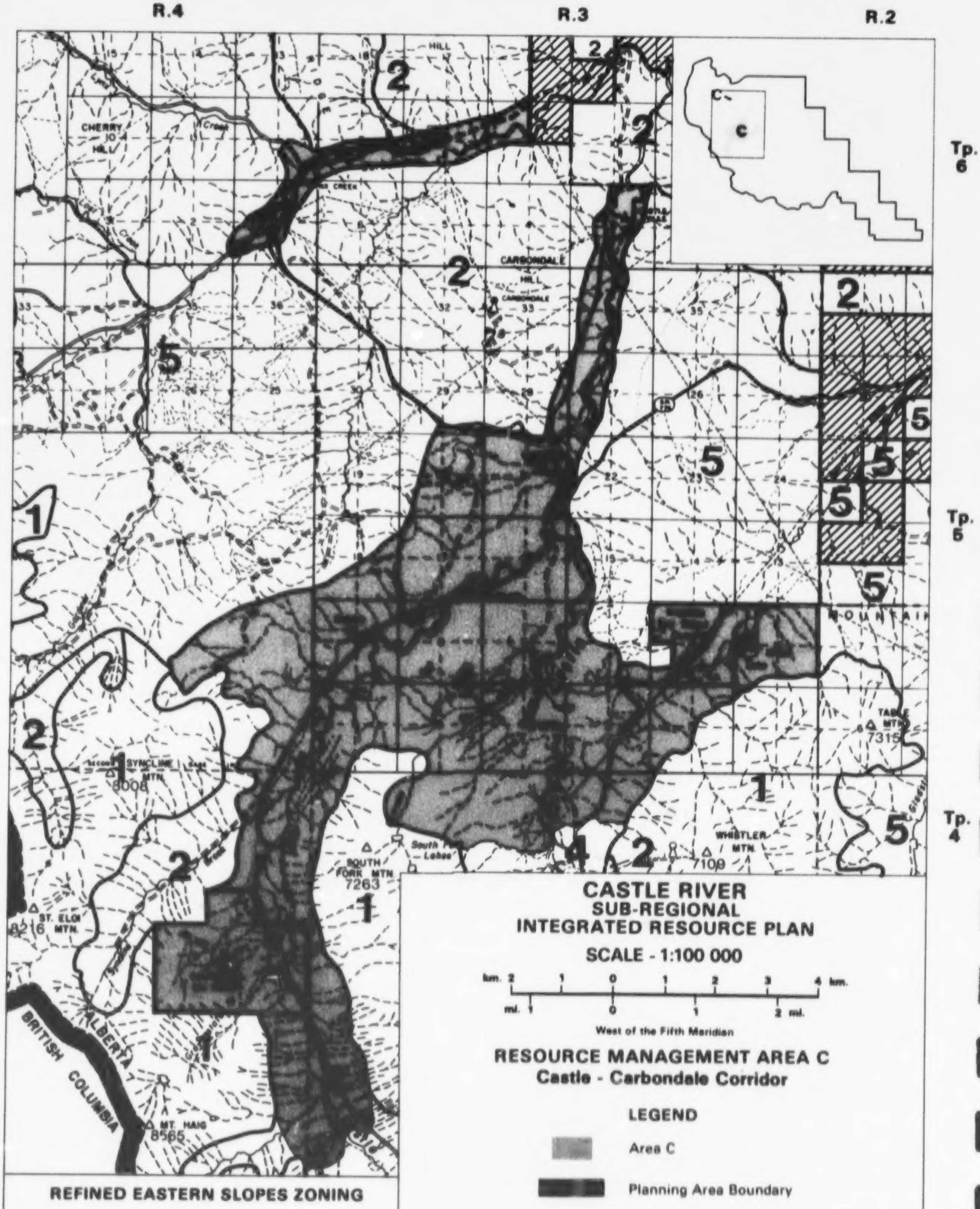
Within the Castle-Carbondale Corridor resource management area, watershed has been listed first as it has been identified a paramount resource by the Eastern Slopes Policy. Tourism and recreation follow to reflect the area's intent to provide for a diverse range of tourism and intensive recreation opportunities. The remainder of the resources have been listed alphabetically.

Watershed

Maintenance of high-quality watershed values is important within this resource management area since the recreation use is focused along the three rivers: Carbondale, West Castle and South Castle. There is occasional gullying along the South and West Castle where roads and trails cross natural drainages. This resource management area is not a headwater area. The greatest concern is with point sources of sedimentation in the flood plains and along stream banks where gullying and erosion may affect the rivers or tributaries.

Management Objective

1. To minimize accelerated soil erosion related to point sources of sediment created primarily by recreation use.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CARBONDALE HILL
SYNCLINE MTN.
8006
ST. ELOI MTN.
8216
SOUTH FORK MTN
7263
WHISTLER MTN.
7109
TABLE MTN
7315
MT. HAIG
8565
BRITISH COLUMBIA
ALBERTA
MOUNTAIN
CASTLE RIVER
SUB-REGIONAL
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West of the Fifth Meridian
RESOURCE MANAGEMENT AREA C
Castle - Carbondale Corridor
LEGEND
Area C
Planning Area Boundary
Patent Land
REFINED EASTERN SLOPES ZONING
1 - Prime Protection
2 - Critical Wildlife
4 - General Recreation
5 - Multiple Use
8 - Facility

Fig. 6: CASTLE - CARBONDALE CORRIDOR RESOURCE MANAGEMENT AREA

Management Guidelines

1. Resource development including recreation will be directed away from unstable and flood-prone areas.

2. Trails and roads should be adequately maintained, especially at stream crossings.

3. Domestic grazing should be managed to minimize stream bank damage.

Tourism

This resource management area is the centre of intensive recreation use in the Castle River planning area. There is excellent potential for regional and provincial tourism. Levels of use are currently high for some recreation/tourism pursuits and there are indications that other uses will also increase.

The West Castle ski facility is located within the resource management area, 28 km southwest of the town of Pincher Creek. A four-season resort development concept, comprising nine additional ski lifts on Haig Ridge and two on Gravenstafel Ridge, extensive snowmaking equipment, an alpine village and condominium units, has been approved in principle by the Alberta Cabinet.

Resource Management Objectives

1. To accommodate the future develoment requirements of the West Castle ski facility.

2. To promote the opportunity for year-round recreation uses in the Castle-Carbondale Corridor that are consistent with the area's natural attributes.

3. To promote the opportunity for private-sector development of commercial services and facilities to support expanded and/or year-round recreation/tourism activities in the Castle-Carbondale Corridor resource management area.

Resource Management Guidelines

1. Facility development must be consistent with the maintenance of the natural environment with particular attention to the protection of watershed, fisheries and wildlife resources.

2. Before a lease is granted for four-season resort development near the West Castle ski facility by the Alberta government, detailed site-design, environmental and economic studies will be prepared by the private sector. The sale of a limited amount of Crown land required for intensive development will also be subject to these information requirements.

3. The Facility Zone (Zone 8) will be modified accordingly as site-design parameters are approved by the government.

4. Private-sector interest in further development of the West Castle ski facility will be assessed.

5. Consideration should be given to allow private-sector facilities to service recreation developments in Zone 4.

6. Analysis of the flood plain will be undertaken to determine its suitability to accommodate facility development.

Recreation

The Castle-Carbondale Corridor resource management area is the centre of intensive recreation use in the Castle River planning area. Alternate annual stream closures for fishing concentrates use in the Castle River Valley one season and in the Carbondale River Valley the next season. Beaver Mines Lake attracts about half the designated summer recreation use within the Rocky Mountain Forest Reserve portion of the Castle River area. The lake was created in the early 1960s when a dam was built on land leased by Scouts Canada. The presence of the lake led to the development of a popular recreational fishery and day-use facility at the Beaver Mines Lake Recreation Area. The lake today attracts users from the Impessa Boy Scout Camp, rural areas and regional communities. Summer hiking occurs at several locales and there is excellent potential for hiking and riding trails. Winter recreation activities include cross-country skiing (Castle ski trails and West Castle Ski Area), snowmobiling and downhill skiing (West Castle Ski Area). Levels of use are currently high for fishing and camping and there are indications that other uses such as canoeing, kayaking and rafting will also increase.

Four-season resort development near the West Castle Ski Area may have a pronounced affect on the scope and intensity of demand for recreation opportunities throughout the resource management area. The area's management intent will accommodate this development and the provision of ancillary recreation opportunities in the future. However, because timing of resort development will largely be determined by private-sector initiatives, the area will be managed for traditional recreation uses and intensities until resort facilities are provided and as shifts in demand occur.

Resource Management Objectives

1. To accommodate a variety of camping and day-use activities and facilities.
2. To provide opportunities for non-motorized summer and winter trail use.
3. To provide opportunities for motorized winter trail use.
4. To manage random camping and summer motorized-vehicle use.
5. To maintain hunting and fishing opportunities.

Resource Management Guidelines

1. The Castle-Carbondale Corridor resource management area will be managed for traditional recreation uses and intensities until resort facilities are provided near the West Castle Ski Area and shifts in demand occur.
2. A system plan for both motorized and non-motorized use trails and associated trailheads and campgrounds for summer and winter use within the resource management area will address the following issues:
   - i) identification of priority trail corridors;
   - ii) suitability of river bank trails;
   - iii) potential for developing river recreation facilities and necessary management requirements;
   - iv) problems associated with random camping and recommendations to alleviate these.
3. Campgrounds and other recreation facilities should avoid flood plains and unstable banks along major rivers.
4. Facility location should be reviewed to ensure protection of the primary range.
5. The suitability of restricting snowmobile use to designated corridors will be determined. Winter vehicle restrictions may be required in areas adjacent to elk winter range in the Carbondale and lower Castle rivers.
6. Adequate public access to recreation facilities should be developed and maintained.

7. Snowmobile access into Beaver Mines Lake will be maintained.

8. Trailhead facilities for snowmobiling near the West Castle Ski Area will be maintained.

9. Fishing access to the Castle and Carbondale Rivers will be maintained, including maintenance of suitable vehicle pull-offs.

Fisheries

The Castle and Carbondale rivers are popular and productive fisheries within the Castle-Carbondale Corridor resource management area. The rivers are subject to alternating open and closed fishing seasons. Streambanks and fish habitat are relatively stable with certain reaches of streams still recovering from the impacts of the 1975 flood.

Resource Management Objectives

1. To maintain and, where possible, to enhance the diversity and productivity of sport fishing opportunities.

2. To maintain and, where possible, to enhance salmonid populations.

Resource Management Guidelines

1. Increased pressure for fishing may require changes to fishing regulations. These changes may include shorter seasons and other restrictions.

2. Fish and Wildlife Division should assess streams for habitat improvement capabilities, and habitat development programs should be identified.

3. Stream access which is causing increased silt loads should be identified and corrective measures should be taken.

Historic Resources

Only a small portion of the Castle-Carbondale Corridor management area has been studied. Information gathered so far, in addition to the topographic and environmental characteristics of the management area, suggests that this area has the greatest potential for prehistoric sites. The Carbondale, Castle, West Castle and South Castle river valleys were important travel corridors and focal points for seasonal game movement in the Castle River area. Major prehistoric sites are believed to exist, particularly in flat terraces above rivers and streams, on lakeshores, on margins of wetlands and in areas with exposures of lithic materials suitable for tool manufacture. Prehistoric occupation may date back more than 12 000 years. The area may also contain the remains of sites relating to early ranching, coal mining and forestry activity. One twentieth century coal mine site is found in the area.

Areas of high palaeontological potential exist along stream and river banks and ridges.

Resource Management Objective

1. To protect historic resources from potential or actual damage from future resource developments, and to conserve these resources for future generations.

Resource Management Guidelines

1. The Archaeological Survey of Alberta, Resource Management Section, will participate in the land use referral process for resource developments proposed in the following areas of high historical resource potential:
   a) Lands adjacent to Beaver Mines Lake, Carbondale and West Castle rivers and their tributaries, lower Syncline Brook and Barnaby Creek.
   b) NE 1/4-3-6-3-W5M (Historic Coal Mine).

Minerals

The hydrocarbon potential of this resource management area is almost unknown as only two wells have been drilled. The well along the Carbondale River was abandoned after testing insignificant shows of natural gas. The other, a capped well, is situated along the Castle River. It encountered substantial amounts of Wabamun formation gas, indicating that the productive structures of the adjacent Waterton gas field extend under this area. Half of the resource management area is covered by petroleum and natural gas dispositions.

Along the Carbondale River, just south of the Blairmore coal field, one section of the Crown's coal rights remains under lease. Although there is the potential for coal development in this location, proposals will not be accepted based on the 1976 Coal Policy categorization. There are no indications of interest in coal throughout the rest of this resource management area; however, unassessed, unquantified potential may exist in the coal beds of the Brazeau formation.

Quarriable and metallic minerals are not of commercial interest in this resource management area. There are no identified deposits, no prospecting or mining activities and no exploration or development dispositions.

Resource Management Objectives

1. To permit industry to define the volume and extent of the Rundle and Wabamun gas pools as they relate to the productive geological structures of the Waterton gas field and to recover this resource.
2. To provide opportunities for industry to explore the entire sedimentary section for petroleum and natural gas throughout this resource management area.

Resource Management Guidelines

1. Guidelines applicable to mineral resource activities are included in the introductory section of Chapter 5, Resource Management Areas.
2. Exploration and development of petroleum, natural gas and quarriable, metallic and aggregate minerals may be conducted if it can be demonstrated that the high recreation values of the resource management area can be maintained.
3. Coal exploration and development will not be permitted in this resource management area because of its high capability, present use and demand for intensive recreation. The importance of the West Castle River Valley for a diverse range of tourism opportunities also renders coal exploration and development activities incompatible with the intent of the area.

Range

The primary rangelands are found along the water courses in the Castle - Carbondale resource management area; there are no secondary ranges. Potential for range improvement has been identified along the Castle and Carbondale rivers. The resource management area forms part of the Castle Allotment, and within this portion of the allotment 500 animal unit months have been lost since the 1960s due to brush encroachment and some recreational development. This represents the largest loss within the Castle Allotment. Recovery of these losses will be restricted because of the high recreation priority of this resource management area.

Approximately 520 ha (1 280 acres) of mixed aspen land has potential for range improvement. Some salvage-logged sites could provide temporary range in the upper West Castle. Proposed recreation developments will impact on the rangeland and improvements will be necessary to maintain capacities.

Resource Management Objectives

1. To maintain the 1977 stocking capacity level of 657 animal unit months currently held.

2. To increase stocking capacities by approximately 150 animal unit months, pending the success of range improvements.

3. To encourage grazing on salvage-logged areas to reduce use of primary range temporarily.

Resource Management Guidelines

1. Range development plans must be prepared for range improvement sites.

2. When improvements are completed, the management plan for the Castle Allotment will be revised to include improvements into the system of use.

3. As improvement sites are located between Castle Falls Recreation Area and Castle River Recreation Area, co-ordination with recreation managers will be essential to minimize the impacts on recreation.

Timber

The timber cover in this resource management area was composed of predominantly pure pine stands at or near maturity, which made these stands highly vulnerable to mountain pine beetle.

Salvage logging has occurred in high recreation and aesthetic areas. The Alberta Forest Service has incorporated the concerns of recreation managers and public in the management of salvage logging and reforestation. This practice will continue. All of this resource management area will form part of the forest land base (6 110 ha or 15 100 acres of productive timber land). However, it is unlikely that this area will contribute appreciably to the annual allowable cut until the immature stands become of commercial value in approximately 40 to 60 years. Timber harvesting will maintain recreation values as directed by the guidelines below.

Management Objective

1. To continue salvage logging and reforestation to improve visual aesthetics and to ensure re-establishment of a forest cover to meet recreational needs.

Management Guidelines

1. Reforestation close to recreation facilities and high-use areas should include a diversity of tree species.

2. The high recreation values of the resource management area will be recognized in planning timber harvesting. To achieve this the following conditions may be applied:

   -- Along most of the proposed and existing traverse trails and corridors, care must be taken to preserve the aesthetics of the area by the use of mainly landscape cutblock layout and a variety of buffer strips.

   -- In stands to be harvested adjacent to intensive recreation areas, timber harvesting should not detract from the aesthetics of the area. Again, landscape layout should be applied and other measures should be taken to ensure that harvesting operations do not impair aesthetics.

   -- Special care on the type and location of access roads for timber extraction is required when they must be located beside recreation areas. Specifically, roads should be located in order to integrate the road for both recreation and harvesting. Reclamation of roads should occur as soon as possible after harvest and reforestation.

3. Harvesting practices such as commercial thinning to improve aesthetics and to meet commercial demands for timber should be considered.

Wildlife

South- and southwest-facing grassy slopes and grassy flats along the Castle River provide key foraging areas for elk and mule deer in the Castle-Carbondale Corridor resource management area. These animals primarily winter in the Carbondale Hill, Maverick Hill and Hastings Ridge areas and periodically use portions of the Castle-Carbondale resource management area.

Development of industrial access associated with mineral exploration and development and timber harvest could have impact on ungulate use of winter range and use of travel corridors. New access will increase hunting pressure and potentials for illegal harvest.

Resource Management Objectives

1. To maintain and, where possible, to enhance the distribution, diversity and quality of wildlife habitat.

2. To increase the opportunity for wildlife to use available habitat.

3. To optimize the opportunity for public interaction with wildlife resources.

4. Elk -- To maintain 350 summer animal unit months and 250 winter animal unit months.
   Mule Deer -- To maintain 1 120 summer animal unit months and 800 winter animal unit months.
   White-Tailed Deer -- To maintain 490 summer animal unit months and 350 winter animal unit months.
   Moose -- To maintain 210 summer animal unit months and 200 winter animal unit months.

Resource Management Guidelines

1. Hunting regulations will be subject to the current Fish and Wildlife Division review process. Various management procedures will be implemented as conditions warrant.

2. Fish and Wildlife Division should identify areas suitable for wildlife habitat development and improvement with the intent of increasing habitat diversity for all wildlife species. Detailed habitat development plans will be forwarded to the Alberta Forest Service for review.

3. Winter recreation opportunities facilitated within the resource management area should not disrupt wildlife travel corridors. Care must therefore be taken in the design of recreation facilities and control of recreation activities.

4. New access will require careful reclamation to minimize potential for impact on wildlife.

5.3.1 Implications of Resource Management Actions

The major implications of resource management actions proposed for the Castle-Carbondale Corridor resource management area are as follows:

Recreation

1. This resource management area will be the focus of environmentally consistent recreation facility development. It is expected that development will be associated with providing access and staging areas to service the backcountry in the adjacent resource management area, plus campgrounds associated with popular natural resource attractions (e.g., Castle and Carbondale rivers). These provisions are consistent with the Eastern Slopes Policy intent for the area.

2. It is recognized that while this resource management area is zoned General Recreation, other resource activities must be compatible with achieving recreation objectives. This will require a detailed recreation systems plan delineating recreation sites and priorities and increased input from recreation managers in other resource plans.

Fisheries and Wildlife

1. Portions of this resource management area are located adjacent to and between key ungulate winter ranges. Winter recreation activities, particularly motorized ones, can reduce security on winter range and can restrict movement of game. These factors could reduce wintering and calving success of ungulates.

2. New logging access will require reclamation and closure to limit vehicle use in areas of wildlife habitat and erosion prone areas.

3. The attainment of wildlife objectives in this resource management area (primarily winter range objectives) will rely, to a

large degree, on limiting and controlling recreation use in portions of this area (i.e., Castle and Carbondale River Flats).

Minerals

1. Based on the Castle River plan's zoning scheme and the Cabinet decision to make petroleum and natural gas a restricted activity in the General Recreation Zone, exploration and development activity may be anticipated in the Castle River and Carbondale River valleys. Since guidelines were not developed to prohibit petroleum and natural gas activities in these General Recreation Zone areas, exploration and development will be allowed except for site-specific modifications to programs.

2. The Castle-Carbondale Corridor provides a significant land base due to capability and present use for meeting future tourism and intensive recreation demands. For this reason coal exploration and development activities will not be permitted. The effect of this decision is negligible, even though potential coal-bearing formations are present, because categorization under the 1976 Coal Policy already prohibits coal activities.

Rangeland

1. Range improvements are essential for the maintenance of 1977 grazing capacities. Grazing, however, is a restricted use within all of this resource management area based on the management priority for recreation. Range improvements may therefore be limited in their utilization of productive capacity of the range resource to ensure compatibility with existing and proposed recreation developments.

Timber

1. Lands held under recreation reservations will be omitted from the forest land base as in normal timber management practices. The remainder of the resource management area will be included in the forest land base. Modifications of normal operating guidelines will be required to ensure adequate buffers around campgrounds and trails and maintenance of aesthetic values. This resource management area will contribute 14 per cent to the long-range annual allowable cut of the C3 Forest Management Unit and hence is a significant portion of the forest land base.

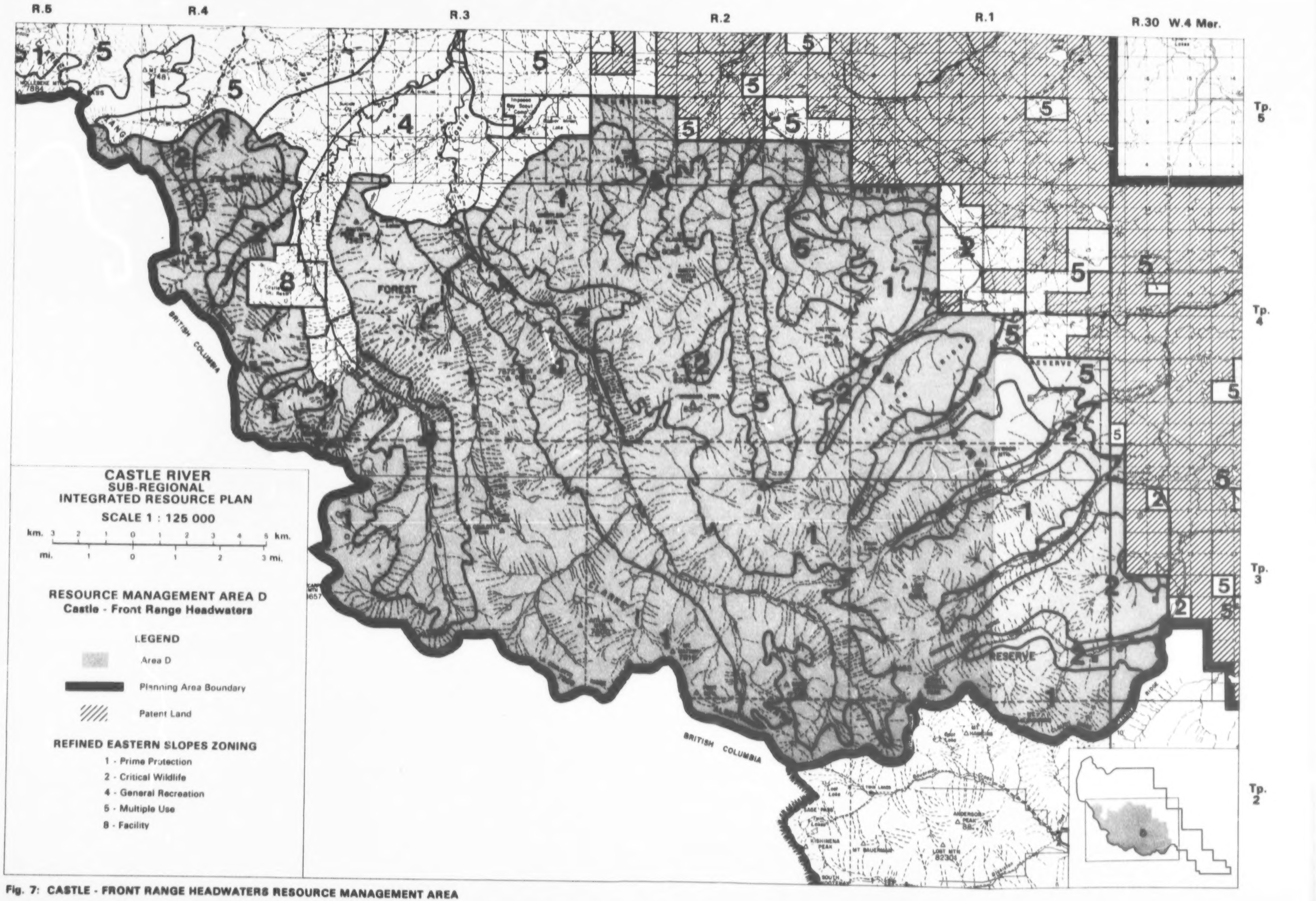
5.4 Castle-Front Range Headwaters Resource Management Area D

The primary intent of the Castle-Front Range Headwaters resource management area (Figure 7) is to provide a wide range of extensive recreation opportunities. This is in recognition of the high potential of this area for wildland recreation as identified in the Eastern Slopes Policy. The majority of the broad recreation objectives for the Castle River planning area will be achieved in this resource management area. To accomplish this, much of the area has been designated as Prime Protection (Zone 1) and General Recreation (Zone 4). The Zone 1 designation protects the aesthetic values of the area for extensive recreation activities as well as maintaining watershed and prime wildlife values. Although the Zone 1 boundary generally follows the ecoregion line that separates the alpine and subalpine, there is one notable exception. Grizzly, Scarpe and Jutland Creek valleys fall below the alpine ecoregion line but have been included in the Prime Protection Zone. It was the intent of the original Eastern Slopes zoning designation to preserve these valleys for the maintenance of watershed and wildland recreation values.

The Middle Kootenay Pass, found at 1 938 m (6 355 ft) above sea level, occurs above the alpine-subalpine interface and therefore qualifies for Prime Protection Zone designation. Year-round demand for access through the pass by recreation users has, however, influenced the establishment of the General Recreation Zone designation. The pass is used by snowmobilers, who often combine it with the North Kootenay Pass to form a long touring route. Motorcyclists and four-wheel-drive users travel through the pass to sightsee and fish in British Columbia during the summer, and berry pickers travel the upgraded road to the wellsite in conventional vehicles or to the summit by four-wheel-drive in the fall. Although some of these traditional uses have been occurring for approximately 25 years, levels have remained relatively low. Since snow accumulation is high, snowmobile access through the pass has little environmental impact. Summer use will have to be monitored to ensure minimal impact.

Several areas adjacent to Prime Protection Zone have been designated as Critical Wildlife (Zone 2). Wildlife throughout the Castle River area is a significant resource for recreation users. Recreation objectives will be achieved within the context of the activity matrix of the Eastern Slopes Policy (Table 2) with further direction provided in the guidelines in this section.

The General Recreation Zone in this resource management area will allow for staging areas along river corridors. The boundary of this zone generally conforms with the subalpine.


R.5
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FOREST
RESERVE
BRITISH COLUMBIA
BRITISH COLUMBIA
CASTLE RIVER
SUB-REGIONAL
INTEGRATED RESOURCE PLAN
SCALE 1 : 125 000
km. 3 2 1 0 1 2 3 4 5 km.
mi. 1 0 1 2 3 mi.
RESOURCE MANAGEMENT AREA D
Castle - Front Range Headwaters
LEGEND
Area D
Planning Area Boundary
Patent Land
REFINED EASTERN SLOPES ZONING
1 - Prime Protection
2 - Critical Wildlife
4 - General Recreation
5 - Multiple Use
8 - Facility

Fig. 7: CASTLE - FRONT RANGE HEADWATERS RESOURCE MANAGEMENT AREA

Font Creek, upper South Castle and Sheep Creek drainages are included in Zone 4. This designation will provide for the protection of watershed, wildlife habitat and recreation resources. Industrial activities, such as petroleum and natural gas exploration and development and timber production, will also be allowed but under special conditions and controls to ensure the extensive recreation intent of the resource management area is preserved. Access will consequently be highly restricted to protect the wildland character of adjacent Prime Protection Zone areas and to ensure an adequate buffer to Waterton Lakes National Park is maintained.

The Gladstone, Mill and Whitney Creek valleys have been designated as Multiple Use (Zone 5); however, even within the Multiple Use Zone localized areas with recreation value must be protected as directed by the guidelines in this plan.

Throughout the resource management area, resource uses will be permitted in as far as they are allowed by the activity matrix of the Eastern Slopes Policy and based upon maintenance and conservation of the natural landscape and wildlife values.

Within the Castle-Front Range Headwaters resource management area, watershed is listed first as it has been identified as a paramount resource by the Eastern Slopes Policy. Recreation is listed second to reflect the resource management area's intent to provide for a wide range of extensive recreation opportunities. The remainder of the resources have been listed alphabetically.

Watershed

The major drainages in the resource management area are the South Castle, West Castle, Mill Creek, Pincher Creek and Drywood Creek. Smaller streams and tributaries in the source areas tend to have incised stable banks. Larger streams and river banks downstream are less stable, as braided channels occur through alluvial deposits.

Resource Management Objective

1. To minimize accelerated soil erosion related to point sources of sediment created primarily by recreation trail use.

2. To continue monitoring drainages in salvage logging areas to ensure maintenance of high water quality.

Resource Management Guideline

1. Location, intensity and methods of land use will be controlled to minimize watershed impacts.

Recreation

The Castle-Front Range Headwaters resource management area contains many regionally and provincially significant wildland resources. Limited natural resource development and associated access within the area has contributed to the maintenance of its wildland character and traditionally low levels of recreational use. The restriction of access in the future is a prerequisite to the maintenance of the area's wildland character and traditional use.

The South Castle area provides a resource base for a wide range of recreation opportunities. Alberta Recreation and Parks has interest in this area for outdoor recreation.

Some conflicts exist between trail users who use motorized means along trails and others who use non-motorized means. There are no formal facility developments, but there are two commercial trail riding operations. Gladstone Ranch is located just outside this resource management area. Snowmobiling occurs in the South Castle and West Castle valleys. The area is scenic and has good potential for non-motorized trail networks. The Great Divide Trail may traverse the area.

Snowmobile access through the Middle Kootenay Pass has negligible environmental impact on wildlife and the sensitive alpine terrain because of the heavy snowfall accumulations. Some concern has however been expressed about the potential harm from off-highway vehicles in summer.

Resource Management Objectives

1. To conserve the wildland character of the Castle-Front Range resource management area.

2. To maintain traditional recreation use levels.

3. To develop and maintain a system of trails and trailheads for summer hiking and equestrian opportunities.

4. To allow for other recreation opportunities on a limited basis as long as they are compatible with extensive non-motorized recreation.

5. To manage off-highway vehicle recreation and random camping activities.

Resource Management Guidelines

1. Alberta Recreation and Parks will participate in normal referrals of operational activities on a consultative basis.

2. The need for backcountry campsites should be assessed.

3. A range of opportunities for hunting and fishing with both motor vehicle and walk-in access will be maintained.

4. Recreation facilities should be located to ensure protection of the primary range for grazing.

5. Backcountry camping areas and other recreation facilities should avoid the South and West Castle flood plains and unstable banks.

6. Motorized vehicle access by recreation users in the Front Range and South Castle River Valley will be restricted all year to protect wildlife and extensive recreation opportunities. Off-highway vehicle use will not be permitted in the South Castle River Valley upstream of the Font Creek - South Castle River confluence.

7. Snowmobiling will continue over Middle Kootenay Pass. The environmental impacts of summer off-highway vehicle use in the Middle Kootenay Pass will be assessed and appropriate controls will be established to mitigate any impacts. This could require legislation to restrict off-highway vehicle use to designated trails or allow snowmobile access only.

8. Trail and trailhead locations along Mill, Gladstone and Whitney creeks should be determined to protect as far as possible these trails from encroachment by other land-use activities.

9. Co-ordinated planning efforts with the Great Divide Trail Association will be required to determine an appropriate route and to protect that route.

10. Formal campgrounds (i.e., serviced camping and vehicle-access camping), residential subdivisions and commercial developments will not be permitted within the resource management area.

Ecological

The steep southwest-facing slope of the Castle River Valley in Section 24 of Township 4, Range 3, West of the 5th Meridian, is the location of a provincially rare floral community consisting of big sagebrush (*Artemesia tridentata*) and creeping mahonia (*Berberis repens*), mariposa lily (*Calochortus apiculatus*) and snow brush (*Ceanothus velutinus*).

Resource Management Objective

1. To protect and maintain a rare floral community consisting of *Artemesia tridentata*, *Berberis repens*, *Calochortus apiculatus* and *Ceanothus velutinus* found north and east of the road in Section 24, Township 4, Range 3, West of the 5th Meridian.

Resource Management Guidelines

1. No equestrian or off-highway vehicle use will be permitted.
2. Only passive non-facility oriented recreation will be permitted (e.g., hunting, primitive camping).
3. No commercial activity will be allowed except for trapping.
4. Domestic grazing will not be permitted.
5. Exploration and development activities for minerals will not be permitted.

Fisheries

The Castle-Front Range Headwaters resource management area contains productive trout streams. Protection of water yield areas within the resource management area is vital to the continued productivity of the streams. Past activities and subsequent use of access by recreationists have affected flow regimes and silt loads in some of the streams. Streambanks and fish habitat are relatively stable, but certain reaches of streams are still recovering from the impacts of the 1975 flood.

The resource management area contains the majority of high alpine lakes found within the Castle River area. Many of these lakes have been stocked and sustain a viable recreation fishery at present use levels.

Resource Management Objectives

1. To maintain and, where possible, to enhance the diversity and productivity of sport fishing opportunities.
2. To maintain and, where possible, to enhance naturally reproducing salmonid populations.

Resource Management Guidelines

1. Increased pressure for fishing may require changes to fishing regulations. These changes may include shorter seasons and various catch restrictions.
2. Recreation development must consider the "Alberta High Mountain Lakes Fisheries Management Program" (Alberta, 1979) since development could have a serious impact on the fisheries management capabilities for these lakes.
3. Fish and Wildlife Division should assess streams for habitat improvement capabilities and habitat development programs should be identified.
4. Access leading into headwater areas should be assessed by Fish and Wildlife Division and Alberta Forest Service to determine the best management strategy (e.g., area closures).
5. Stream access increasing silt loads should be identified and corrective measures taken.

Historic Resources

Historical resource inventories have not been conducted in the Castle-Front Range Headwaters management area. Nevertheless, the area has considerable potential for prehistoric sites. The Middle Kootenay Pass is a major access into the Flathead Valley in British Columbia and an unnamed pass provides access into the Waterton Lakes area. These passes were most likely used in prehistoric times and may contain sites on their summits and along their approaches. The presence of usable high elevation plant and animal resources would have provided additional incentives for the prehistoric use of the manage- ment area. Locations with considerable site potential include alpine meadows, terraces above streams and rivers, lakeshores and areas where lithic materials suitable for tool manufacture are exposed. Prehistoric occupation of the area may date back more than 12 000 years. The area may also contain the remains of sites associated with early ranching, coal mining and forestry activity.

Areas of high palaeontological potential exist along stream and river banks and in areas of rock outcrop in the Prime Protection Zone.

Resource Management Objective

1. To protect historical resources from potential or actual damage from future resource developments; and to conserve these resources for future generations.

Resource Management Guideline

1. The Archaeological Survey of Alberta, Resource Management Section, will participate in the land use referral process for resource developments proposed in the following areas of high resource potential:
   a) Mid Kootenay and Sheep Creek passes and Avion Ridge.
   b) Lands adjacent to South Scarpe, Bovin, Ruby and South Forks lakes (and other alpine lakes), West Castle and South Castle rivers and major tributaries, and Gladstone, Mill, Whitney, Pincher, Drywood, South Drywood, Spionkop, Yarrow creeks and major tributaries.

Minerals

The eastern third of the Castle-Front Range Headwaters resource management area coincides with part of the producing Waterton gas field. This area contains sizable reserves of gas from the Mississippian Rundle Group and the Devonian Palliser Group. It is estimated that 16 747 X 10^6 m^3 (594 413 X 10^6 ft^3) of established gas reserves remain within the resource management area. All the drilling activity (31 flowing or capped gas wells, two gas injection wells and four abandoned wells) with the exception of one abandoned well in the West Castle River Valley, has been restricted to the Waterton gas field. Gas was being produced from this field prior to implementation of the Eastern Slopes Policy. As a result, there is a commitment under the policy to develop the field to its full economic potential and applications for step-outs into restrictive zoning could be expected. Structures that tend to trap natural gas have been discovered in the Jutland and Font Creek area through seismic programs conducted prior to the approval of the Eastern Slopes Policy in 1977. A well was proposed for this area in the fall of 1977 but was denied on the basis of the Eastern Slopes Policy zoning. However, interest in drilling this well has not diminished as industry believes the reserves are substantial.

Twelve quartz mineral Certificates of Record were issued on three sections of land between Yarrow and Spionkop creeks. Exploration has been conducted on these properties resulting in the discovery of ore rich in copper, silver and uranium. Mining of these minerals has not taken place and further exploratory work has been denied because of the Eastern Slopes Policy zoning and environmental sensitivity.

Coal is not a mineral of interest in the Castle-Front Range Headwaters resource management area. According to interpretations of the area's bedrock geology, formations considered potentially coal bearing are not present.

Resource Management Objectives

1. To permit industry to define the volume and extent of the gas pools in the productive geological structures of the Waterton field and to recover this resource.
2. To provide opportunities for the orderly exploration and development of hydrocarbons within the Castle - Front Range Headwaters resource management area, including the Prime Protection Zone, only in the instance of a step-out well location.

Resource Management Guidelines

1. Operating guidelines for petroleum and natural gas exploration and development in the Front Range canyons and upper South Castle will consider access restrictions, low intensity and duration of development and complete reclamation.
2. Pipelines originating in the South Castle River Valley will not be permitted to cross the Front Range.
3. Exploration and development of quarriable, metallic and aggregate minerals will take into account the concerns for extensive recreation throughout the resource management area and in particular the priority areas for trailheads and trails. Exploration and development of these minerals will not be permitted in Zone 4 upstream of the South Castle River - Font Creek confluence.
4. Guidelines applicable to mineral resource activities are included in the introductory section of Chapter 5, Resource Management Areas.

5. Petroleum and natural gas step-out wells[5] may be permitted if it can be demonstrated that the high recreation values of the resource management area can be maintained.

6. Exploration and development activities for minerals will not be permitted in Section 24, Township 4, Range 3, West of the 5th Meridian, in order to protect an ecological resource consisting of a provincially rare floral community.

Range

The rangelands of the Castle - Front Range Headwaters resource management area are located in the river valleys. In the Drywood and South Drywood creeks, there are about 520 ha (1 280 a.) which have been identified as having potential for range improvement. Since the 1960s, there has been a decline of 600 animal unit months in the resource management area. There has been little salvage logging that would provide suitable temporary range. Therefore, range improvement in Mill Creek and Southend allotments will be required to maintain current commitments.

Secondary range along the South Castle River valley bottom, upstream from the confluence of Font Creek and the South Castle River, represents additional animal unit months for the South Castle Allotment. Management of the valley bottom in this area for domestic grazing will help reduce the need for range improvement required to maintain the 1977 level of use.

Management Objectives

1. To maintain, as a minimum, the 1977 stocking level of 2 048 animal unit months currently held.

2. To increase stocking capacities by 600 animal unit months, pending the success of range improvements.

Management Guidelines

1. Range development plans must be prepared for range improvement sites in the Southend Allotment.

2. Mill Creek Allotment will be assessed for methods of maintaining productivity.

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[5] See Glossary for definition.

3. The range management plan for the Castle River Allotment portion of the resource management area will have to be updated to consider grazing use, on an informal basis, on salvage-logged sites.

4. Modifications of range plans to incorporate use of logged sites in the Castle-Front Range Headwaters resource management area will consider recreation values.

5. Apart from the South Castle River valley bottom upstream of the Font Creek confluence, domestic grazing potential is very limited in upper reaches of the South Castle Valley. As such, use of the Font Creek, upper South Castle and Sheep Creek valleys is not recognized for domestic grazing purposes.

6. Only non-mechanized access will be permitted in association with domestic grazing along the South Castle valley bottom upstream of the Font Creek confluence.

Timber

The site capability for timber production in the South and West Castle drainages is high. In the Front Range, timber production potential is limited and best suited for products associated with miscellaneous timber use (e.g., posts, poles and firewood). With the exception of the timber in Prime Protection Zone, all of this resource management area will be included in the forest land base. The Prime Protection Zone in the South Castle (Scarpe Creek, Grizzly Creek and Jutland Brook valleys) contains a commercially-viable timber resource that will not be included in the forest land base and only sanitation cutting will be permitted there.

Resource Objective

The broad timber resource objectives apply with no specific objectives for this resource management area.

Management Guidelines

1. All timber management activities will reflect the recreation priority of the resource management area. In particular the trail potential of Mill, Gladstone and Whitney creeks (in Zone 5) will be protected through aesthetic logging practices.

2. All timber management activities will recognize the wildlife values in the Front Range.

Wildlife

The Castle-Front Range Headwaters resource management area provides an extensive area of summer range for elk, mule deer, grizzly and black bear and cougar. During the summer, alpine areas contain significant numbers of bighorn sheep and mountain goats. These alpine areas are considered to be some of the best bighorn sheep range in North America. Critical winter ranges for sheep have been identified throughout the resource management area and include areas along the Front Range, Barnaby Ridge and Table Mountain.

Bighorn sheep populations were drastically reduced in the winter of 1982-1983. These reductions were associated with bacterial pneumonia, which may have been originally transmitted by domestic livestock.

Resource Management Objectives

1. To maintain and, where possible, to enhance the distribution, diversity and quality of wildlife habitat.

2. To increase the opportunity for wildlife to use available habitat.

3. To optimize the opportunity for consumptive and non-consumptive uses of wildlife resources.

4. Sheep -- To maintain 1 750 summer animal unit months and 2 800 winter animal unit months.
   Goats -- To maintain 100 summer animal unit months and 140 winter animal unit months.
   Elk -- To maintain 1 470 summer animal unit months and 100 winter animal unit months.
   Mule Deer -- To maintain 3 500 summer animal unit months and 1 500 winter animal unit months.
   White-Tailed Deer -- To maintain 700 summer animal unit months and 150 winter animal unit months.

   Moose -- To maintain 560 summer animal unit months and 100 winter animal unit months.

Resource Management Guidelines

1. Hunting regulations will be subject to the Fish and Wildlife Division review process. Various management procedures will be implemented as conditions warrant.

2. Domestic sheep grazing must not occur within one mile of occupied bighorn sheep range. Fish and Wildlife Division should determine whether domestic cattle are carriers of bacterial pneumonia contagious to bighorn sheep. If so, appropriate action should be taken (i.e., potential carriers should be removed from sheep range).

3. Fish and Wildlife Division should identify areas suitable for wildlife habitat developments and improvement with the intent of increasing habitat diversity for all wildlife species.

4. Habitat improvement plans must be developed by Fish and Wildlife Division in consultation with the Alberta Forest Service.

5. Closure of access that is not required for industrial purposes should be determined by the Fish and Wildlife Division in conjunction with the Alberta Forest Service if this access leads into headwater areas significant for wildlife habitat.

6. Subalpine areas adjacent to Prime Protection Zone should be managed to maintain wildlife values. This will require special care in forest cutting operations and other resource extraction activities.

7. Access reclamation and closure must be an integral part of the operating programs.

5.4.1 Implications of Resource Management Actions

The major implications of resource management actions proposed for the Castle-Front Range Headwaters resource management area are:

Recreation

1. Integrated resource management objectives and guidelines recognize the significance of Mill, Gladstone and Whitney creeks for trail development of a limited nature.

2. Potential step-out petroleum and natural gas development into the Prime Protection Zone could have a detrimental effect on maintaining the wildland recreation values of this zone. Consequently, step-out applications should be reviewed carefully.

3. The suspension of off-highway vehicle use in Zone 4 upstream of The South Castle River - Font Creek confluence will ensure the wildland recreation and watershed protection objectives for

this area are maintained. It will also ensure visitation rates for the backcountry of Waterton Lakes National Park are consistent with Parks Canada's management objectives.

Ecological

1. The Castle-Front Range Headwaters resource management area contains a provincially rare floral community. This area will be protected through provisions in this plan.

Fisheries and Wildlife

1. Access associated with further development of petroleum and natural gas reserves in the Castle-Front Range Headwaters resource management area will have the potential of conflicting with the maintenance of wildlife use of critical winter range, particularly in the stream valleys of the Front Range. Additional road closures to restrict public access by motor vehicle will be required to protect the security of these ranges.

2. A quartz mineral lease on Spionkop Ridge is located on prime bighorn sheep winter range. The wildlife significance of the area was recognized in its designation as Prime Protection. Preservation of this habitat will be ensured because the plan directs that mineral development will not be permitted.

3. A General Recreation (Zone 4) designation will allow petroleum and natural gas exploration and development activities in the upper South Castle Valley. This area is now remote and provides wildlife habitat security to a variety of species (e.g., grizzly bear, cougar, mountain goat, bighorn sheep, elk and mule deer). It also affords potential for wildland recreation. Exploration and development activities and subsequent access may reduce wildlife habitat security and wildland recreation values in the South Castle. It may also have a negative impact on fisheries habitat.

Minerals

1. Based on the Castle River plan's zoning scheme and the Cabinet decision to make petroleum and natural gas a restricted activity in the General Recreation Zone, exploration and development activity may be anticipated in the General Recreation Zone portions of the West Castle and South Castle River valleys. Since guidelines were not developed to prohibit

petroleum and natural gas activities in these General Recreation Zone areas, exploration and development will be allowed except for site-specific modifications to programs.

2. Quartz mineral Certificates of Record were issued in the Spionkop Ridge area in 1963 and 1964. Since that time the lessee has conducted exploration on these properties, resulting in the discovery of ore rich in copper, silver and uranium. This area, composed of steep alpine slopes, also provides critical winter habitat for bighorn sheep. In recognition of the alpine environment and critical winter range for sheep, the area has been designated Prime Protection (Zone 1) with a few inclusions of Critical Wildlife (Zone 2). Mineral exploration and development activities will therefore not be allowed on these claims, implicating sterilization of these metallic minerals and compensation to the lessee.

3. The upper South Castle Valley provides a significant land base for extensive recreation opportunities. To preserve the wildland recreation character of this area, the exploration and development of quarriable, metallic and aggregate minerals will not be permitted upstream of the South Castle River - Font Creek confluence. The potential for these minerals in this area is presently not well known. Therefore, the opportunity cost associated with the pre-emption of this activity can not be quantified.

Timber

1. The Critical Wildlife, General Recreation and Multiple Use Zone lands will contribute to the forest land base but modifications of normal timber operating conditions will be required in all of these areas to ensure that the primary management intent for the resource management area is maintained.

2. A Zone 4 designation for the upper reaches of the South Castle River (upstream of the South Castle River - Font Creek confluence) will include these lands in the forest land base. Because these lands have been extensively harvested and reforested in recent years, the option to harvest will not be realized until growing stock matures.

5.5 Castle Foothills Resource Management Area E

The primary intent of the Castle Foothills resource management area (Figure 8) is to maintain and manage the forage resource for use by domestic livestock and wildlife.

Most of the Crown lands in this resource management area have been designated as Critical Wildlife (Zone 2) and Multiple Use (Zone 5). The Beaverdam-Paine Lakes area and the area of Beauvais Lake Provincial Park have been designated as Zone 4. All of the Crown lands in the Castle Foothills area are under grazing dispositions. There are Critical Wildlife Zones in this area and maintenance of forage on these lands is essential. Therefore, allocation of resource uses to specific lands will be based upon maintenance and conservation of forage for use by domestic livestock and wildlife.

Within the Castle Foothills resource management area, watershed has been listed first as it has been identified as a paramount resource by the Eastern Slopes Policy. Range and wildlife have been jointly assigned second priority. This is consistent with the intent of the resource management area to maintain and manage the forage for use by domestic livestock and wildlife on Crown lands. The remainder of the resources are listed alphabetically.

Watershed

The Castle Foothills resource management area is not significant in terms of water production within the Castle River planning area. Flow regime is highly variable with peak flows occurring in May and June. A number of lakes within the resource management area are important for recreation.

Sixty per cent of the total domestic cattle stocking capacity for the planning area will be maintained on Crown lands in the Castle Foothills resource management area. A concern has been raised that high potential may exist for fecal colliform pollution of downstream water supplies. The maintenance of an adequate vegetative cover to minimize potential for soil erosion has been raised as a watershed concern.

Resource Management Objective

1. To maintain a high-quality water supply for onstream and downstream users.

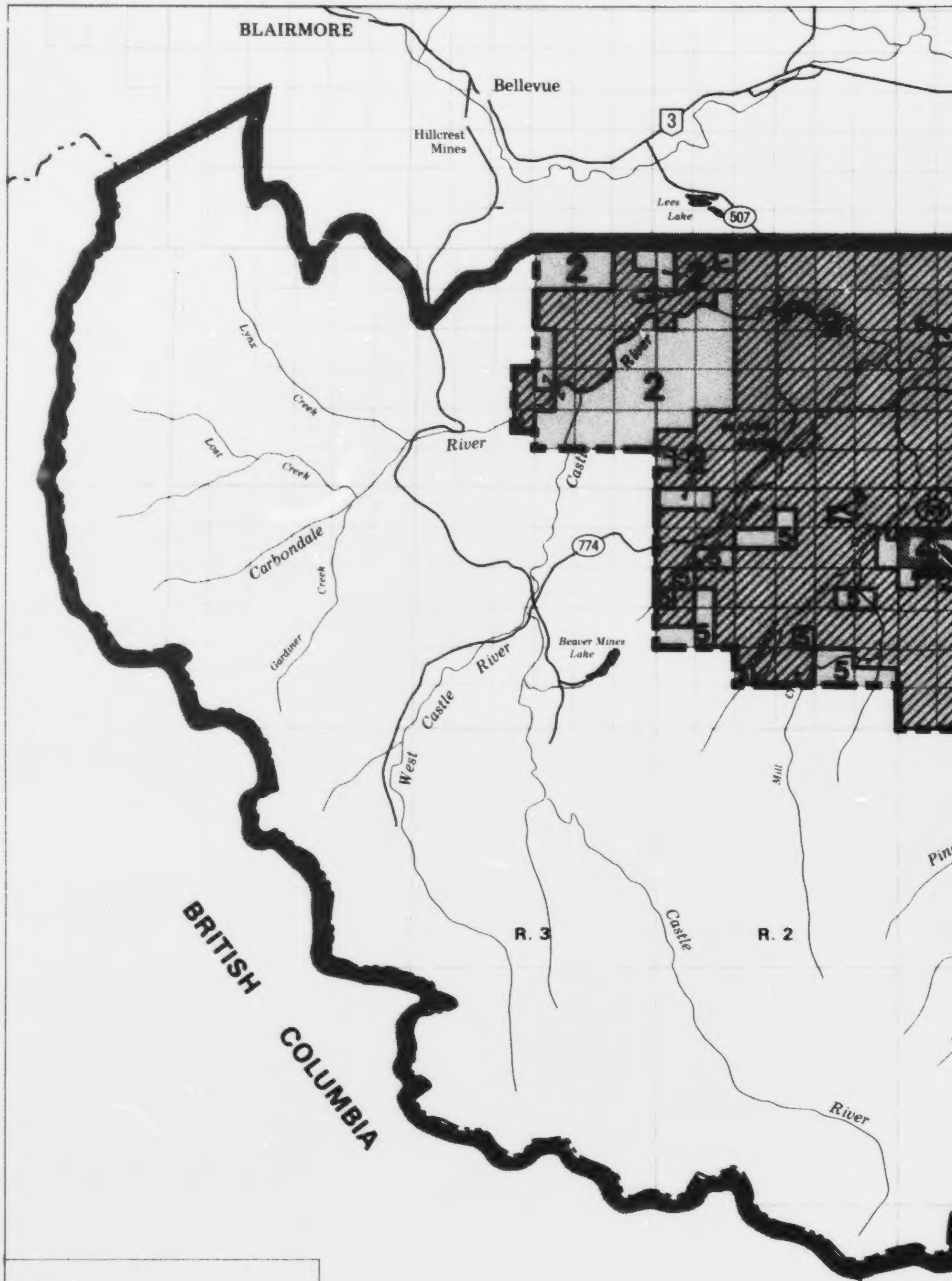
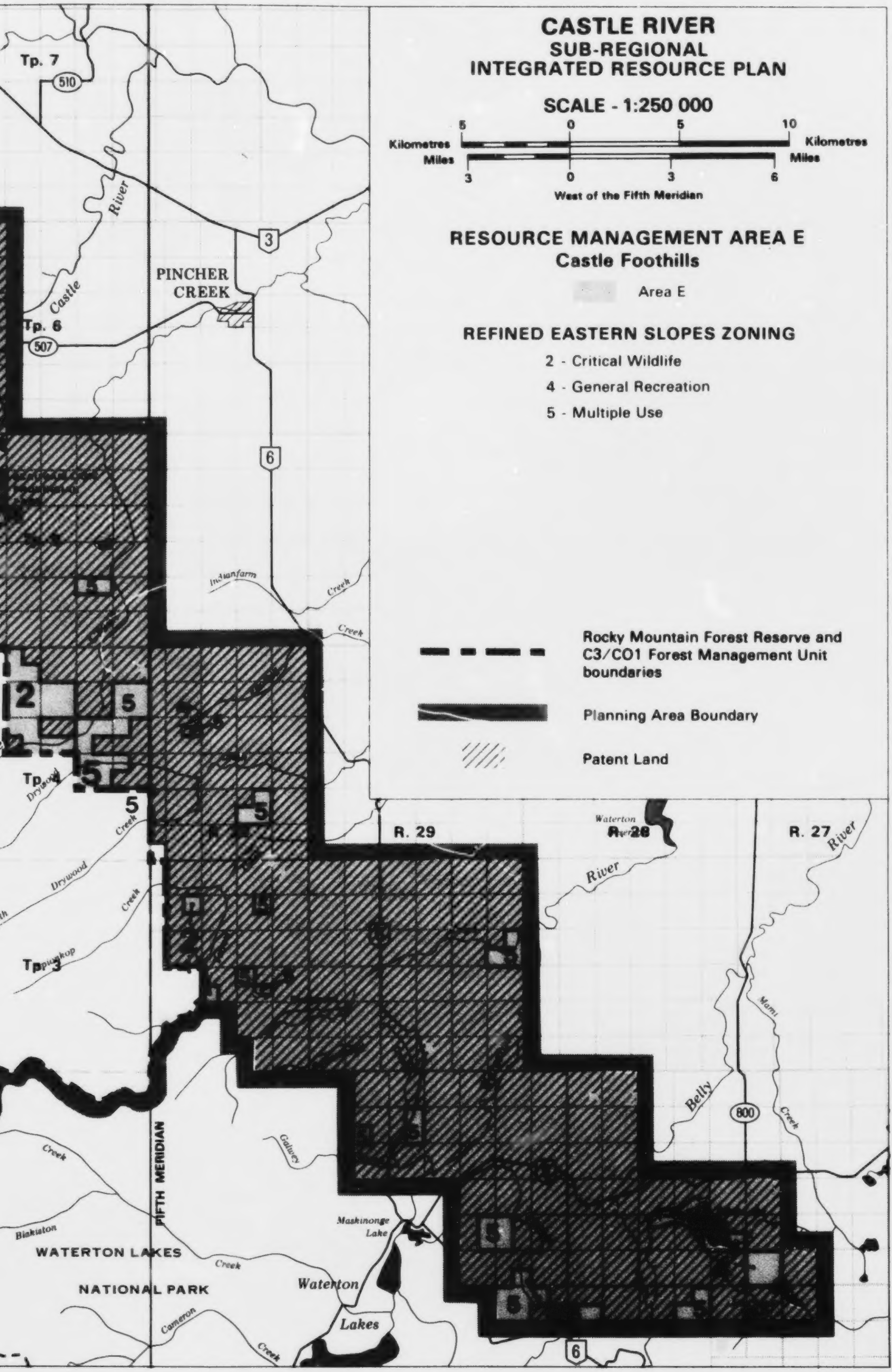

BLAIRMORE
Bellevue
Hillcrest Mines
3
Lees Lake
507
2
2
2
River
Lynx
Creek
Lost
Creek
River
Castle
Carbondale
Creek
Gardiner
774
Beaver Mines Lake
River
Castle
West
5
5
5
Mill
Pin
R. 3
R. 2
Castle
River
BRITISH
COLUMBIA
Bauerman
E

Fig. 8: CASTLE FOOTHILLS RESOURCE MANAGEMENT AREA



CASTLE RIVER
SUB-REGIONAL
INTEGRATED RESOURCE PLAN

SCALE - 1:250 000

5
0
5
10
Kilometres
Kilometres
Miles
Miles
3
0
3
6
West of the Fifth Meridian
RESOURCE MANAGEMENT AREA E
Castle Foothills
Area E
REFINED EASTERN SLOPES ZONING
2 - Critical Wildlife
4 - General Recreation
5 - Multiple Use
Rocky Mountain Forest Reserve and C3/CO1 Forest Management Unit boundaries
Planning Area Boundary
Patent Land
Tp. 7
510
Castle
River
3
PINCHER
CREEK
Tp. 6
507
6
Indianfarm
Creek
Creek
2
5
5
Tp. 4
Drywood
5
Creek
5
Drywood
Creek
Tp. 3
Pincher
R. 29
Waterton
R. 28
R. 27
River
River
Mami
Creek
Belly
800
FIFTH MERIDIAN
Creek
Galwey
Maskinonge
Lake
Blakiston
WATERTON LAKES
Creek
NATIONAL PARK
Waterton
Lakes
Cameron
Creek
6

2. To reduce soil erosion and sedimentation from activities located near stream banks.

Resource Management Guideline

1. The location of resource-use activities adjacent to stream banks will be regulated.

Range

Crown lands in the White Area are currently stocked to carrying capacity given the present level of management.

A total of 43 grazing leases and two grazing permits covering 152 quarter sections (9 842 ha or 24 320 a.) of Crown land currently provide 7 820 animal unit months of domestic grazing within the resource management area. The rangeland resource consequently provides a significant contribution to the local economy.

Resource Management Objectives

1. To maintain 7 820 animal unit months for domestic grazing.
2. To maintain the present Crown range resource base through proper management for benefit of both domestic livestock and wildlife.
3. To provide range improvements on five per cent of Crown lands (approximately 485 ha or 1 200 a.) to enhance domestic grazing and wildlife habitat.

Resource Management Guidelines

1. Range management plans will be developed for all grazing lands within the resource management area.
2. All affected government agencies will have an opportunity through the referral systems for input into range development plans that will be completed for Crown lands.
3. If domestic grazing and wildlife conflicts are identified by Public Lands Division and Fish and Wildlife Division during joint inspections, temporary reductions may occur. A combination of reductions and more-intensive range management practices should be followed to re-establish the carrying capacity of the rangeland.

Wildlife

The Crown lands within the Castle Foothills resource management area provide a variety of both winter and summer habitats. Important winter habitat for elk occurs along the Castle River. Most deer winter range occurs in the foothills in the vicinity of Lees and Beauvais lakes. Wildlife depredation[6] on privately owned lands is severe in the vicinity of Waterton Lakes National Park and Beauvais Lake Provincial Park. The game sanctuary status of these legally defined areas has a significant impact on the Fish and Wildlife Division's management influence.

Resource Management Objectives

1. To maintain and, where possible, to enhance the distribution, diversity and quality of wildlife habitat.

2. To increase the opportunity for wildlife to use available habitat.

3. To optimize opportunities for consumptive and non-consumptive uses of wildlife resources.

4. To reduce the adverse impacts of wildlife depredation on patented lands, particularly adjacent to Waterton Lakes National Park and Beauvais Lake Provincial Park.

Resource Management Guidelines

1. Hunting regulations will be subject to the current Fish and Wildlife Division review process. Various management procedures will be implemented as conditions warrant (e.g., shorter hunting seasons).

2. Fish and Wildlife Division should identify areas suitable for wildlife habitat development and improvement with the intent to: a) increase habitat diversity for all wildlife species, and b) establish new winter foraging areas to attract ungulates in order to reduce crop depredation.

3. Winter use restrictions on motorized vehicles may be implemented on portions of the resource management area.

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[6] See Glossary for definition.

4. Research and development of special management techniques to reduce wildlife-landowner conflicts should continue.

5. Access to public lands that are held under Grazing Lease or Grazing Permit is presently restricted by common law. The government encourages the disposition holder and the general public to co-operate in the use of these lands where outdoor recreation activities are involved. Public access for recreation on Crown lands under domestic livestock grazing dispositions will be maintained in accordance with Alberta Energy and Natural Resources operating guidelines.

6. Alberta Recreation and Parks, and Parks Canada, in co-operation with the Fish and Wildlife Division, should manage wildlife populations requiring public and privately owned lands adjacent to Beauvais Lake Provincial Park and Waterton Lakes National Park, respectively, to reduce landowner - wildlife conflicts.

7. Wildlife reservation notations will be applied for in those areas which have been identified as critical ungulate winter range.

Fisheries

The quality of fish habitat in the Castle Foothills resource management area is dependent upon upstream and stream-side land-use activities. Continued efforts in upstream portions of the watershed to maintain and improve water quality will improve fish habitat within the resource management area.

Resource Management Objectives

1. To maintain and, where possible, to enhance the diversity and productivity of sport fishing opportunities.

2. To maintain and, where possible, to enhance salmonid populations.

Resource Management Guidelines

1. Fish and Wildlife Division should assess streams for habitat improvement capabilities and habitat development programs should be identified.

2. Fishing regulations will be subject to the Fish and Wildlife Division review process. Various management procedures will be implemented as conditions warrant.

3. Access to public lands that are held under Grazing Lease or Grazing Permit is restricted by common law. The government encourages the disposition holder and the general public to co-operate in the use of these lands where outdoor recreation activities are involved. Public access for recreation on Crown lands under domestic livestock grazing dispositions will be maintained in accordance with Alberta Energy and Natural Resources operating guidelines.

Historic Resources

Historical resources inventories in portions of the Castle Foothills management area have identified significant numbers of historical resource sites. These data, in addition to the knowledge that throughout prehistoric time the entire area was a critical wintering area for the plains bison, suggest that the area has the greatest potential for prehistoric sites. Areas of greatest potential include flat terraces above streams and rivers, lakeshores, margins of wetlands, elevated areas suitable for game observation and exposures of bedrock or cobbles of material suitable for stone tool manufacture. Prehistoric occupation in the area may date back more than 12 000 years. Historic period sites are fairly numerous in this area and relate to early coal mining and agricultural activities. Twelve historic coal mines and most known archaeological and palaeontological sites occur within this management area. The majority of these are found on deeded land.

Resource Management Objective

1. To protect historical resources from potential or actual damage from future resource developments; and to conserve these resources for future generations.

Resource Management Guidelines

1. The Archaeological Survey of Alberta will liaise with the Oldman River Regional Planning Commission to review development proposals calling for major surface disturbance on deeded lands.

2. The Archaeological Survey of Alberta, Resource Management Section, will participate in the land use referral process for resource developments proposed on Crown land in the following areas:
   a) Crown lands adjacent to the Carbondale, Waterton and Castle rivers and major tributaries, Pincher and Beaver Mines,

Gladstone, Mill, Whitney, Drywood, South Drywood, Spionkop, Yarrow, Dungarvan, Cottonwood and Crooked creeks.

b) Crown lands within Beauvais Lake Provincial Park and east of the Park (i.e., SE 1/4 and LSD 9, 10, 15 of 25-5-2-W5M).

c) Crown lands adjacent to unnamed lakes (SW 1/4 and LSD 15 of 11-4-30-W4M and NE 1/4-26-3-30-W4M).

d) Crown lands adjacent to Paine Lake and Beaverdam Lake (SW 1/4-36-1-28-W4M).

Minerals

The Castle Foothills resource management area is more than one-quarter covered by portions of three producing gas fields -- Waterton, Pincher Creek and Lookout Butte. Each field is capable of producing gas from the Mississippian Rundle zone, while the Waterton field is also capable of gas production from the Devonian Wabamun formation. It is estimated that 13 756 X 10^6 m^3 (488 251 X 10^6 ft^3) of gas reserves still remain within these areas of the resource management area. Drilling activity, which consists of 23 flowing or capped gas wells, one oil well and nine abandoned wells, has been limited to these three fields with the exception of four of the abandoned wells. In order to produce the gas, two processing plants were necessary. There is a small one in the Lookout Butte field and a large sulphur scrub plant in the Waterton field. There is also a main gas pipeline which runs the length of this resource management area. It has been determined that the potential for gas-producing structures between the Pincher Creek and Waterton is low. The most probable area for additional gas discovery is along the northwest extension to the Waterton field. The interest in natural gas throughout the resource management area remains strong as only 20 per cent of the petroleum and natural gas rights are undisposed.

This resource management area contains the entire Beaver Mines coal field. This field delineates an area of subbituminous coal deposits from which extraction has taken place. Six mines were once active throughout the field but no mines are open. Although there is an estimated 13 megatonnes (14.3 million short tons) of coal reserves which could be recovered if development were renewed, such proposals would be denied, based on the 1976 Coal Policy categorization.

There are six quartz mineral Certificates of Record covering one and one-half sections of land (388.5 ha or 960 a.) along Dungarvan Creek. Exploration on these claims has uncovered a magnetite deposit within the Belly River formation. There have been no proposals to mine this ore.

Resource Management Objectives

1. To provide opportunities for industry to explore the entire sedimentary section for petroleum and natural gas throughout this resource management area and to recover these resources.
2. To provide opportunities for industry to explore and develop the metallic mineral resources within this resource management area.

Resource Management Guidelines

1. Guidelines applicable to mineral resource activities are included in the introductory section to Chapter 5, Resource Management Area.
2. Coal, quarriable, metallic and aggregate mineral exploration and development will not be permitted in the General Recreation Zone because this zonation identifies an existing provincial park (Beauvais Lake) where the activity is prohibited by park policy, on lands intended to accommodate future park expansion needs; and on lands in the Paine-Beaverdam lakes area, which have a high capability and demand for water-based recreation.
3. In view of the significance of Zone 2 lands in the resource management area for the protection of elk and mule deer winter range, only underground development of coal reserves will be permitted.
4. Exploration for petroleum and natural gas will not be permitted on Crown lands within 400 m (0.25 mi) of Paine, Beaverdam and Little Beaverdam lakes.

Recreation

Beauvais Lake Provincial Park provides 85 campsites and water-oriented facilities on 593 ha (1 468 a.) of land around Beauvais Lake. The lake is an attractive recreation resource, and the park is utilized to capacity on most summer weekends. Policy and concept planning, which guides the development and management of the park, is completed.

The Paine-Beaverdam area provides excellent recreation resources and has the potential of providing additional water-based recreation opportunities. The focus of intensive use in this area is Paine Lake, while less intensive vehicle-access opportunities should occur at Beaverdam Lake. The area around Little Beaverdam Lake should be managed for its natural values and potential for extensive recreation.

Crown lands within the resource management area disposed to domestic grazing are also significant for land and river-based recreation uses. Forty-five quarter sections (2 914 ha or 7 200 a.) (identified in Figure 9) adjacent to the Green Area currently provide public access for random camping, fishing and river-based recreation. In addition to these 45 quarter sections, the north half of Section 11, Township 5, Range 3, West of the 5th Meridian also provides public access for recreation users to Mill Creek.

Resource Management Objectives

1. To provide a diverse range of outdoor recreational and educational opportunities oriented toward fishing and boating on Beauvais Lake and the high recreational capability of the shoreline and surrounding foothills for day-use recreation, camping, hiking, and interpretation.

2. To encourage year-round outdoor recreation at Beauvais Lake.

3. To conserve the natural and cultural attributes of Beauvais Lake Provincial Park.

4. To manage representative examples of the Rocky Mountain Montane and Parkland Foothills natural regions within Beauvais Lake Provincial Park.

5. To expand the land base of Beauvais Lake Provincial Park onto adjacent Crown land within the framework of the "Beauvais Lake Provincial Park Policy Recommendations Report" (Alberta, 1980b).

6. To manage the area surrounding Paine and Beaverdam lakes for recreation and conservation purposes.

7. To continue to provide intensive recreation opportunities at Paine Lake. To provide vehicle-access opportunities of a less intensive nature at Beaverdam Lake. To maintain the natural environment around Little Beaverdam Lake for foot-access recreation activities.

8. To maintain suitable quality and quantity of water in Beaverdam, Paine and Little Beaverdam lakes for recreation purposes.

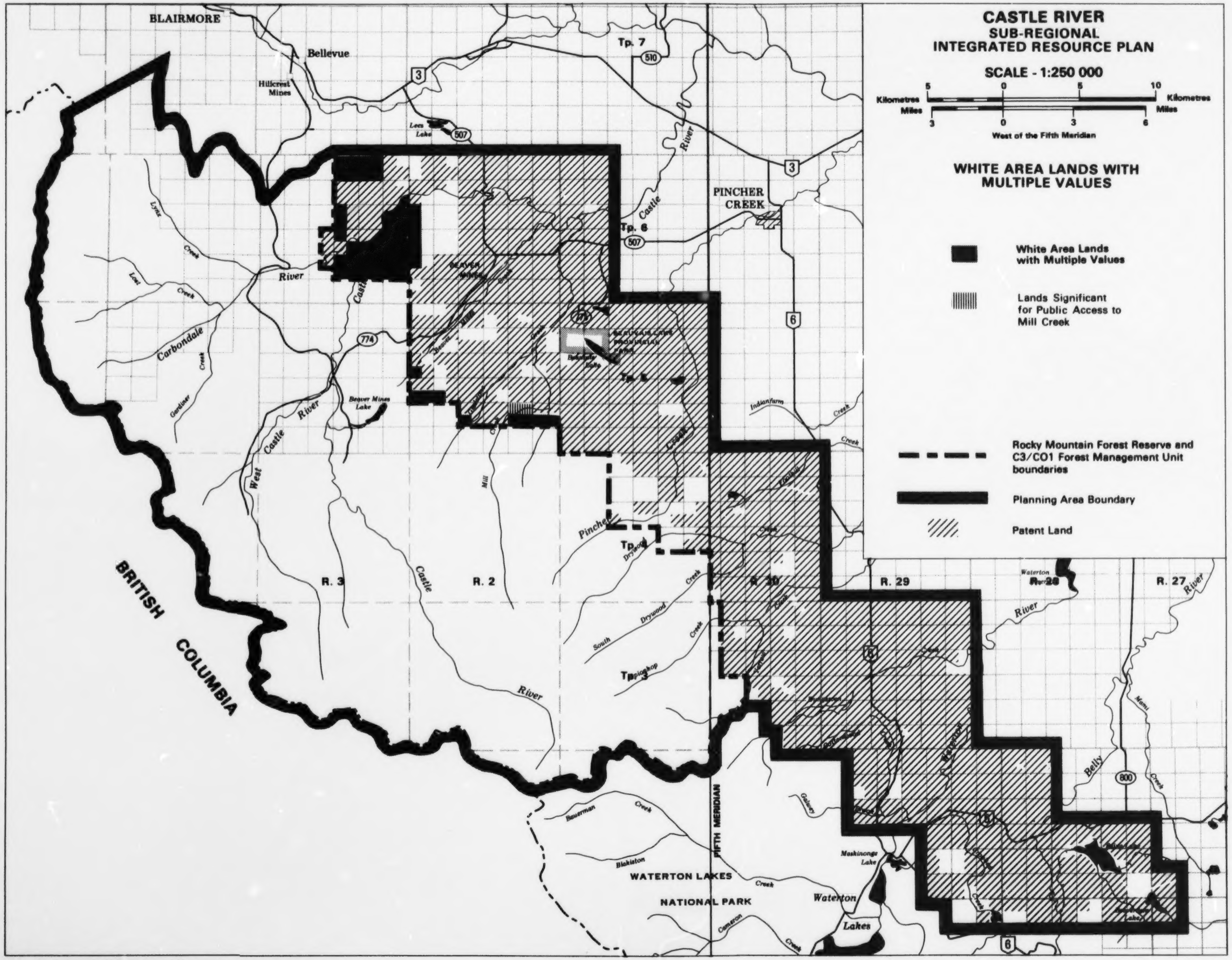
CASTLE RIVER
SUB-REGIONAL
INTEGRATED RESOURCE PLAN
SCALE - 1:250 000
Kilometres
Miles
West of the Fifth Meridian
WHITE AREA LANDS WITH MULTIPLE VALUES
White Area Lands with Multiple Values
Lands Significant for Public Access to Mill Creek
Rocky Mountain Forest Reserve and C3/CO1 Forest Management Unit boundaries
Planning Area Boundary
Patent Land
BLAIRMORE
Bellevue
Hillcrest Mines
Lees Lake
Tp. 7
Tp. 6
PINCHER CREEK
Castle River
Beaver Mines
Beaver Mines Lake
Beauvais Lake Provincial Park
Carbondale
Lynx Creek
Lost Creek
Gardiner Creek
West Castle River
Mill Creek
Pincher Creek
Drywood Creek
South Drywood Creek
Yarrow Creek
Indianfarm Creek
Waterton River
R. 3
R. 2
R. 30
R. 29
R. 28
R. 27
BRITISH COLUMBIA
FIFTH MERIDIAN
Blakiston Creek
Bauerman Creek
Cameron Creek
WATERTON LAKES NATIONAL PARK
Maskinonge Lake
Waterton Lakes
Belly River
Mami Creek
3
507
510
774
6
800

Fig. 9: WHITE AREA LANDS WITH MULTIPLE VALUES

9. To maintain public access on Crown lands, particularly the north half of Section 11, Township 5, Range 2, West of the 5th Meridian, (Figure 9) which is used by recreationists to gain access to Mill Creek.

Resource Management Guidelines

1. The recreation intent for the areas of Zone 4 in this resource management area precludes the granting of long-term grazing leases. Unimproved grazing dispositions for periods of no longer than 10 years are acceptable outside of Beauvais Lake Provincial Park.

2. Selective timber harvesting for sanitation and salvage purposes may be considered on these General Recreation Zone lands.

3. The recreation value of the total 47 quarter sections (3 043 ha) of Crown lands adjacent to the Green Area (Figure 9) should be identified in the range management plans and in any subsequent timber harvesting plans.

4. Access to public lands that are held under Grazing Lease or Grazing Permit is presently restricted by common law. The government encourages the disposition holder and the general public to co-operate in the use of these lands where outdoor recreation activities are involved. Public access for recreation on Crown lands under domestic livestock grazing dispositions will be maintained in accordance with Alberta Energy and Natural Resources operating guidelines.

5. Residential subdivisions will not be permitted in the General Recreation Zone within the resource management area because of the high public demand for, but limited supply of, water-based recreation opportunities in the region.

6. Formal camping (i.e., vehicle-access and serviced camping) will only be permitted during the summer months in the Critical Wildlife Zone.

Timber

The timber in the C01 Management Unit (White Area) is normally harvested on a liquidation basis for local and commercial use. This is a reflection of the intent of the Green-White boundary established in 1948 to separate forested areas managed for multiple use (Green Area) from potential settlement lands (White Area). Forty-seven Crown quarter sections (see Figure 9) adjacent to the Green Area are currently providing wildlife habitat, domestic livestock range and recreation access to the Castle River and Mill Creek. There are also 1 490 ha (3 684 a.) of productive timber land. The existing timber value is low, as most of the pine was seriously damaged by the mountain pine beetle infestation. Although normally reforestation is not done after harvesting in the White Area, there was reforestation after pine beetle salvage logging in recognition of the timber production potential of this land. Reforestation also helped to maintain continuity of the visual aesthetics with adjacent Green Area land. The reforestation plans were reviewed with Public Lands Division, Fish and Wildlife Division and the Castle River Stock Association to ensure domestic grazing and wildlife carrying capacities were maintained.

Resource Management Objectives

1. To continue salvage logging of beetle-killed stands to reduce the possibility of wildfire, to utilize stands that are infested and to complete forest renewal.

2. To manage the 45 Crown quarter sections (2 914 ha or 7 200 a.) that are contiguous to the Green Area and have value for timber production as part of the forest land base (Figure 9).

3. To manage the remaining Crown lands according to Alberta Forest Service policy in the White Area (i.e., reforestation generally not practised after logging).

Resource Management Guidelines

1. The 45 quarter sections identified in Figure 9 will be managed to optimize their range, wildlife, timber and recreation potentials. These lands will be included in the forest land base and consequently will not be available for sale.

2. Reforestation will occur after harvesting on the 45 quarter sections. However, in extreme cases where 1977 domestic livestock stocking rates cannot be achieved on primary range using range improvements on brush-encroached and aspen-covered areas, cutovers may not be reforested in favour of providing the necessary rangelands.

5.5.1 Implications of Resource Management Actions

The major implications of resource management actions proposed for the Castle Foothills resource management area are:

Range

1. Range improvements to increase grazing capacity on Crown lands may help to reduce crop depredation by ungulates on adjacent private lands if some additional forage is retained for elk and deer winter feeding.

Fisheries and Wildlife

1. Exploration and development activities for petroleum and natural gas and minerals on Crown lands in this resource management area may have impact on fish and wildlife values. Strict conditions regarding timing, extent and type of activity as well as reclamation needs will be required to minimize the impacts.

2. Conservation of natural resources within Beauvais Provincial Park has created a wildlife sanctuary which has in turn resulted in elk depredation on private lands around the park and has decreased harvest capabilities in the area. Proposals to expand the size of the park will increase this depredation problem.

Minerals

1. Due to the importance of the recreation amenities in the Beauvais Lake and the Paine-Beaverdam Lakes General Recreation zones, coal activities will not be allowed. Although these same areas are underlain by either Kootenay or Brazeau coal-bearing formations, the effect of this planning decision will be negligible because the categorization under the 1976 Coal Policy already prohibits coal activities in these areas.

2. For the protection of habitat critical to the wintering of elk, coal developments in Zone 2 will be restricted to underground or in-situ mining methods. This will not result in any further sterilization of known coal resources since the reserves, as currently assessed, are only recoverable by underground methods.

Timber

1. An estimated 1 488 ha (3 684 a.) of productive timber land in the White Area will be included in the forest land base for the Castle River area due to the assurance of government

stewardship for 45 quarter sections (2 914 ha) of Crown land. The 45 quarters will not be eligible for public sale because of their multiple use values, which in addition to timber production include watershed protection and range, wildlife recreation management. Inclusion of this productive timber land into the forest land base will help compensate for reductions in the forest land base in 1977 due to the Prime Protection Zone designation.

2. Sustained-yield management of productive timber land in the White Area will supplement grazing capacities on existing rangelands, on a temporary basis, through the informal use of cutover areas.

6. PLAN MANAGEMENT

General administrative procedures and mechanisms required for plan implementation, monitoring and amendment are outlined in this section. Detailed program and project implications and associated benefits and costs incurred as a result of this plan will be contained in a supplemental implementation document (Southern Region Regional Resource Management Committee, in prep.). This document, subject to approval by the Government of Alberta, will complement the plan.

General Administration

The Castle River Sub-Regional Integrated Resource Plan will be made operative within the terms of appropriate legislation, regular programs and activities of the government, operational plans, specific developed projects, referral processes and administrative bodies. The revised zoning provides a means of processing applications for new public land dispositions within the planning area. Existing systems for referral and interdepartmental review will apply to the plan. Resources will continue to be administered by the departments responsible, in line with the approved zoning, resource management guidelines and any operational plans.

Government management agencies participating in the Castle River Sub-Regional Integrated Resource Plan will have several responsibilities to ensure the effective delivery of this plan. It will be their responsibility to deal with any conflicts or concerns with respect to implementation or interpretation of any of the plan's provisions. These responsibilities are outlined by subject area below.

Referral Systems: Participating government management agencies will ensure that existing referral systems of the Alberta government (e.g., Alberta Energy and Natural Resources, 1981, 1981a) are adequate to encompass all affected or concerned agencies.

Plan Monitoring: The Castle River Sub-Regional Integrated Resource Plan will be reviewed annually by the Southern Region Regional Resource Management Committee[7] to:

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[7] See Glossary for definition.

-- assess the relevancy of the stated resource objectives in light of changing conditions;

-- assess the resource management guidelines and referral procedures;

-- assess agency operational plans to ensure their consistency with the Castle River resource management area intents, objectives and guidelines; and

-- recommend amendments to the Castle River Sub-Regional Integrated Resource Plan and future actions required to maintain or promote government resource management activities in the planning area.

An annual report will document changes in the plan. The report will also highlight the previous year's activity in the planning area, including the number, type and location of referrals and what conflicts or concerns were addressed and resolved. The report will also indicate what might be expected to be accomplished in the planning area during the next year. The report may be deferred if it is not needed because of a lack of activity or progress on government resource management objectives within the planning area.

A major plan review by the Southern Region Regional Resource Management Committee will occur at five-year intervals to facilitate:

-- a comprehensive assessment of all aspects of the plan, including but not limited to broad resource management objectives, land-use zoning, activity/zone matrix and resource management area boundaries and intents;

-- a public review on the same basis as the public is involved in the development of new integrated resource plans; and

-- a statement recommending amendments to the plan and future actions required to maintain or promote government resource management activities in the planning area.

A five-year report will document all amendments. Major plan reviews may be undertaken more frequently than every five years if major resource policy commitments or developments of program initiatives require them.

Amendment Procedures: Changes to the planning area boundary, broad planning area resource management objectives, land-use zoning, activity/zone matrix and the resource management area boundaries and intents will require major amendment to the Castle River Sub-Regional Integrated Resource Plan. An amendment to the plan may be required as a result of an annual review, major five-year review, government request or a request from an individual, group or organization outside the government. Proposed amendments to the Castle River Sub-Regional Integrated Resource Plan from outside the government should be made by formal application to the Assistant Deputy Minister of the Resource Evaluation and Planning Division, Alberta Energy and Natural Resources[8]. Opportunities for public review of proposed amendments to the Castle River Sub-Regional Integrated Resource Plan will be provided before changes are approved by the government. A decision on requests to amend an integrated resource plan will be endorsed by the Associate Minister of Public Lands and Wildlife or his designate. Amendments which entail a major policy decision or a change to the basic intent of the plan may be forwarded by the Associate Minister to the Cabinet Committee for approval.

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[8] Guidelines for preparing requests for amendments to integrated resource plans are available upon request.

GLOSSARY

Animal Unit Month (AUM)	Measure of forage or feed required to maintain one animal unit (i.e., a mature cow of 455 kg [1 000 lbs] or equivalent) for 30 days (*Resource Conservation Glossary*, Soil Conservation Society of America).
Annual Allowable Cut	Total volume of timber that may be harvested in one year.
Archaeological Resource	"... a work of man that (i) is primarily of value for its prehistoric, historic, cultural or scientific significance, and (ii) is or was buried or partially buried in land in Alberta or submerged beneath the surface of any water course or permanent body of water in Alberta". (*Historic Resources Act*, Revised Statute of Alberta [henceforth abbreviated RSA] 1978, H-8).
Commercial Development	All activities and infrastructure associated with the development of facilities for the use of the general public, including fixed-roof recreation accommodation, such as hunting, fishing, skiing and backcountry lodges; hotels, motels, apartments, townhouses, cottages; and commercial recreation activities involving facilities such as ski hills and golf courses, whether owned and/or operated by the private or public sectors.
Commercial Timber Permit	Authorization for the permittee to harvest timber and which identifies lands on which timber may be harvested, the period of time within which the timber may be harvested, the actual timber to be harvested and the terms and conditions on which the permit is issued (*Forest Act*, RSA 1980, c. F-16).
Consumptive Use	Those uses of resources that reduce the supply--such as hunting, logging and mining (*Wildlands Planning Glossary*, USDA Forest Service). Conversely, non-consumptive use does not reduce the supply-- for example, wildlife viewing.

Crown Land	Any land belonging to the Crown in right of Alberta.
Domestic Grazing	All activities associated with the production and utilization of forage for domestic livestock.
Eastern Slopes Zones	The Eastern Slopes Policy document, first issued in 1977, identified three policy areas and eight corresponding regional land-use zones: A. Protection -- 1) Prime Protection, 2) Critical Wildlife, 3) Special Use; B. Resource Management -- 4) General Recreation, 5) Multiple Use, 6) Agriculture; C. Development -- 7) Industrial, 8) Facility. The primary objectives of regional zoning are: a) to provide resource management intents for broad units of land; b) to recognize opportunities and allocate resources at a broader regional scale; c) to provide background and direction for more detailed integrated resource planning; and d) as a consequence of the latter, to resolve land-use conflicts (*A Policy for Resource Management of the Eastern Slopes, Revised 1984* [Alberta, 1984].
Flow Regime	Distribution of stream flow over time (usually one year).
Forest Land Base	Land considered to be capable of contributing to the social and economic welfare of the province if it is predominantly maintained under forest management. Includes provisions for production of wood and wood products on a sustained yield basis, wildlife, grazing, recreation, and protection and production of water supplies.
Forest Management Unit	An area of forest land designated by the minister for the purposes of administration (*Forest Act*, RSA 1980, c. F-16). The annual allowable cut of timber is determined with respect to forest management unit boundaries.
Forest Reserve	Lands in the province of Alberta set aside primarily to maintain good watershed conditions and to obtain high water yields through the management of vegetative cover as insurance against soil erosion and to minimize the danger of flash floods. Other benefits

	of the forest reserve are timber production, grazing, recreation use and use of fish and wildlife (Alberta's Forests, Department of Lands and Forests, revised 1971).
Front Range (Castle River Planning Area)	Castle River planning area team designation for the land area between and including Pincher Ridge and Spionkop Ridge in the southeastern portion of the Castle-Front Range Headwaters resource management area.
Grazing Allotment	Synonymous with range allotment. A rangeland area based on natural or watershed boundaries designated for the use of prescribed number of cattle, managed by permittee(s) and directed by range management plan prepared by the Alberta Forest Service (Range Management Section, Forest Land Use Branch, Alberta Forest Service).
Grazing Lease	Crown grazing-land disposition issued on an area of land which is suitable for supporting livestock. Leases are legislated under Public Lands Act (RSA 1980, P-30) and are issued for Crown lands in the Green Area and White Area, outside the Rocky Mountain Forest Reserve, usually for a term of five or ten years. The lease allows the lessee exclusive use of the land for grazing (Range Management Section, Forest Land Use Branch, Alberta Forest Service).
Grazing Permit	Official, written permission to graze a specific number, kind and class of livestock for a specific period on a defined range allotment (Wildland Planning Glossary), USDA Forest Service). Permits are issued on an annual basis by the forest superintendent for the Green Area, pending the preference quota for each permittee and the available animal unit months (AUM) in each allotment. Grazing permits are legislated pursuant to Forest Reserves Act (RSA 1980, F-15) (Range Management Section, Forest Land Use Branch, Alberta Forest Service). Within the White Area, grazing permits are issued on an annual basis, frequently on lands under reservation for another purpose or on lands for which it is not considered in the public interest to grant long-term dispositions. Grazing permits are legislated

	through Alberta Regulation 64/70 found under Public Lands Act (RSA 1980, P-30).
Green Area	The Green Area, established in 1948 by the Alberta Order-in-Council 213/48, consists basically of the non-settled forest lands and covers 50.9 per cent of the total area of the province of Alberta. Public lands in the Green Area are managed primarily for forest production, watershed protection, fish and wildlife management, recreation and other multiple uses. Permanent settlement, except on legally subdivided lands, as well as agricultural uses other than grazing, have been excluded (Alberta Public Lands [Alberta, 1981a].
Historical Resource	Any work of nature or of man that is primarily of value for its palaeontological, archaeological, prehistoric, historic, cultural, natural, scientific or aesthetic interest (Historical Resources Act, RSA 1979, H-8).
Historical Resource Impact Assessment	Projects normally instituted in conjunction with development programs which are anticipted to cause ground surface disturbance within the province of Alberta. The object of such projects is to locate all historical resource sites to be affected by the development program, to evaluate the worth of such sites relative to Alberta historical resources as a whole, to determine the nature of the impact of the development program on individual sites, and to propose conservation procedures for those sites to be affected by the development. (Archaeological Survey of Alberta)
Historic Site	"... any site which includes or is comprised of an historical resource of an immovable nature or which cannot be disassociated from its context without destroying some or all of its value as an historical resource and includes a prehistoric, historic or natural site or structure." (Historic Resources Act, RSA 1979, H-8)
Integrated Resource Management (IRM)	Co-ordinated, interagency approach to comprehensive planning and shared decision-making in the overall management of diverse natural resources and their use. A basic principle of IRM is consultation before action; concerned agencies consult and discuss implications of possible courses of action

	so that a mutually acceptable solution can be determined. Integrated resource management is a comprehensive, co-ordinated approach to planning and administering Alberta's resources as efficiently as possible, with the goal of producing the greatest benefits for present and future Albertans (Resource Planning Branch, Resource Evaluation and Planning Division, Alberta Energy and Natural Resources).
Miscellaneous Timber Unit Area	Land set aside within a forest management unit to provide timber for local use. The area represents a portion of the annual allowable cut for the total forest management unit. Timber is allocated for local use through Local Timber Permits or Commercial Timber Permits.
Off-Highway Vehicle	Motorized vehicle used for cross-country travel on land, water or snow, including four-wheel-drive vehicles, motorcycles, track vehicles and snow vehicles but not motor boats (Off-Highway Vehicle Act, RSA 1980, c. 0-4).
Operational Plans	Provincial government resource management agencies prepare long- and short-range plans for the management of resources under their jurisdiction. These specific resource management plans generally deal exclusively with the resource(s) for which a management responsibility has been delegated. Wildlife management plans, timber management plans, range management plans and recreation management plans are examples.
Palaeontological Resource	"... a work of nature consisting of or containing evidence of extinct multicellular beings and includes those works or classes of works of nature designated by the regulations as palaeontological resources." (Historic Resources Act, RSA 1979, H-8)
Point Source Of Sedimentation	Term used to denote where sedimentation is occurring as a result of land use which is in direct contact with the stream (e.g., road crossings). Conversely, a non-point source of sedimentation is used to denote sedimentation arising from a land use within the watershed but not adjacent to the stream (e.g.,

	timber harvest cutblocks may change the quantity and timing of run-off which may lead to higher flows and erosion of stream banks downstream).
Preliminary Disclosure	Means by which both the private and public sectors may make major development proposals, on a confidential basis, to government. Through preliminary review, the government may indicate whether it has objections "in principle" to a proposal's form, timing, location or any other essential feature. No objection in principle of a major development proposal resulting from preliminary disclosure constitutes approval for the filing of necessary applications and documents as required under controlling legislation (A Policy for Resource Management of the Eastern Slopes, Revised 1984 [Alberta, 1984]).
Primary Range	An area which animals prefer to use and over which they will graze when management is limited (Wildland Planning Glossary, USDA Forest Service). The primary range will be overused before secondary range is used when animals are allowed to shift for themselves (Glossary of Terms, Society for Range Management).
Productive Geological Structure	Types of geological situations which contain economically viable concentrations of naturally occurring minerals such as petroleum and natural gas (e.g., traps), coal (e.g., seam formations) and metals (e.g., igneous intrusives).
Program	Plan of procedure; a schedule or system under which action may be taken toward a desired goal.
Project	Specific plan or design intended to meet desired program goals. A work item definable in terms of plans and specifications.
Public Land	All public land in Alberta is under the administration of the Associate Minister of Public Lands and Wildlife, except that public land which is, by virtue of any other act or an order of the lieutenant governor in council, under the administration of

	another minister of the Crown or of a Crown corporation. The title to the beds and shores of all rivers, streams, water courses, lakes and other bodies of water is declared to be vested in the Crown in right of Alberta and under the administration of the Associate Minister of Public Lands and Wildlife (Public Lands Act, RSA 1980, P-30).
Rangeland	Land on which the (climax or natural potential) plant community is dominated by grasses, grass- like plants, forbs or shrubs suitable for grazing or browsing and present in sufficient quantity to justify grazing or browsing use. Land on which the native vegetation (climax or natural potential) is predominantly grasses, grass-like plants, forbs or shrubs suitable for grazing or browsing use. This includes lands revegetated naturally or artificially to provide a forage cover that is managed like native vegetation. Rangelands include natural grasslands, savannahs, shrub lands, most deserts, tundra, alpine, communities, coastal marshes and wet meadows (Society for Range Management).
Recreation	**Extensive Recreation**: The recreational use of trails, natural lakes, rivers, streams and generally undeveloped or minimally developed areas. The term includes such activities as hiking, backpacking, hunting, fishing, snowmobiling, horse-back riding and cross-country skiing (Wildland Planning Glossary, USDA Forest Service). **Intensive Recreation**: High-density recreational use such as developed camp and picnic grounds, swimming beaches, ski hills, aerial tramways, golf courses and other sites or areas requiring continuous recreation management and services to maintain the recreation opportunities.
Referral Systems	The Alberta government has established formal mechanisms for the internal review of land-use applications originating from within the Alberta government and the private sector. Government management agencies concerned or affected by the

	provisions of an application participate in its review. Each management agency subsequent to the review files its recommendation for the approval or rejection of the application. These positions are co-ordinated by a lead agency (i.e., "one window" approach) which, in turn, provides the proponent with a comprehensive decision.
Regional Resource Management Committee (RRMC)	A group of regional directors representing each of the involved Divisions of Alberta Energy and Natural Resources and other agency representatives on an occasional and as needs basis. The RRMC reviews planning documents and has primary responsibility for the implementation stage of the planning process.
Reserve Block	Area of timber exempted from harvest. The reserve block is usually harvested after the cut area has been reforested to a height of 1.8 m (6 ft) to 2.4 m (8 ft) or after 20 years have elapsed since the initial cut.
Residential Subdivisions	All activities and infrastructure associated with permanent-housing subdivisions for residents.
Resource	Any part of the natural environment which society perceives as having value.
Resource Integration Committee (RIC)	A first-level approvals body responsible for supervising and monitoring the integrated resource management planning program.
Resource Management Area	A geographical unit which has a common resource management intent (e.g., wildlife habitat protection, multiple use, extensive and intensive recreation).
Resource Management Guidelines	Measures which prescribe or define: a) conditions, requirements or standards which may be imposed upon those activities which have a direct or indirect effect on resources or resource uses; b) information collection activities and responsibilities;

	c) decision-making activities and responsibilities; and d) procedures for making decisions about activities.
Resource Management Implication	A statement in an integrated resource plan that attempts to outline: a) benefits to accrue to the public as a result of the policy decisions made through the plan's resource management objectives, guidelines, and Eastern Slopes zoning refinement; b) resource management costs incurred (generally in qualitative terms) to implement the proposed resource management actions; and c) potential trade-offs between mutually exclusive resource uses.
Resource Management Objective	A frame of reference that provides a degree of measure in reaching designated goals. More specifically, resource management objectives: a) document desired conditions that spell out ends rather than means; b) are cast as infinitives rather than in the imperative mood or future tense; c) are presented in a hierarchical fashion which demonstrates continuity in detail; and d) are quantifiable and can be achieved with existing technology or knowledge.
Restricted	An activity which will not be permitted until stricter than normal conditions are defined through the integrated decision-making process such as integrated resource planning and referrals.
Route	Usually a mapped but unsigned primitive travel way which has a low standard of maintenance. Summer routes may not have an evident tread.
Salvage Cutting	A cutting made to utilize dead, downed and injured trees before the timber becomes unmerchantable.
Sanitation Cutting	A cutting made to remove dead, diseased, infested, damaged or susceptible trees to reduce or prevent the spread of insects or pathogens.

Secondary Range	An area which is unused or lightly used by livestock under minimal management and will ordinarily not be fully used until the primary range has been overused (Wildland Planning Glossary, USDA Forest Service).
Staging Area	A campground developed to provide access to trails.
Step-Out Well	A proposed well that, in the judgment of the Mineral Resources Division, Alberta Energy and Natural Resources (based on geophysical, geological or engineering technical data), has a reasonable chance of penetrating the same hydrocarbon-bearing structure discovered by a well drilled prior to July, 1977 (Mineral Resources Division, Alberta Energy and Natural Resources).
Summer Animal Unit Month (Wildlife)	The period June to November inclusive for Rocky Mountain sheep and goats, and May to November for elk, mule deer, white-tailed deer and moose.
Surface Disturbance	Because historical resources generally exist on the surface or are shallowly buried in the upper components of the soil horizon, surface disturbance can include any mechanical activity that affects the distribution of near-surface or buried sediments. In the case of open prairie, even extensive vehicular activity over the surface is considered disturbance. In the case of forested conditions, any activity that displaces soil horizons immediately below forest litter or deeper is considered surface disturbance. In the case of a significant known historical resource containing stratified or layered occupations, compaction of sediments as a result of heavy vehicular activity is considered disturbance (Archaeological Survey of Alberta).
Sustained Yield	The yield that a forest can produce continuously at a given intensity of management without impairment of the productivity of the land. Sustained-yield timber management therefore implies continuous production of timber so planned that at the earliest practical time there is a balance between timber growth and cutting (Wildland Planning Glossary, USDA Forest Service).

Timber Quota	**Coniferous Timber Quota**: A percentage of the volume of the annual allowable cut as it relates to coniferous timber that a quota holder may harvest.
	Deciduous Timber Quota: The volume or area of deciduous timber that a quota holder may harvest. (Forests Act, RSA 1980, c. F-16)
Trail	A signed, mapped travel way for motorized or non-motorized use that has an evident tread (in summer) and is developed and maintained to a prescribed standard.
Trailhead	**Major Trailhead:** A parking lot for 10 to 15 cars with facilities (which may include a map sign, brochures, picnic tables, toilets, garbage bin and loading facilities) developed to provide access to trails. Overnight camping is not allowed unless designated.
	Minor Trailhead: A parking lot for five cars or fewer developed to provide access to designated trails or routes. Signs are the only infrastructure provided.
Water Quality	Quantity of solid and dissolved material carried out by a stream (Resource Conservation Glossary, Soil Conservation Society of America).
White Area	The White Area is the region of the province settled initially and includes nearly one-third of the total area of Alberta. Available public lands in this region, suitable for settlement and agriculture and not required for conservation, recreational uses or wildlife habitat, for example, may be applied for, pursuant to Public Lands Act (RSA 1980, P-30).
Wildland Recreation	In relative terms, extensive recreation occurring on lands that are on the less utilized and less altered side of a continuum from totally developed to completely untouched lands. The term is not exact in that the land may be under a low level of management for several land uses and is therefore not truly wild.

Wildlife Depredation	Use of lands and/or land products by wildlife for their survival which is determined by human land occupants to be in direct competition with a proposed or existing use. Examples include wildlife use of agricultural crops, hay stacks and domestic livestock ranges.
Winter Animal Unit Month (Wildlife)	December to May inclusive for Rocky Mountain sheep and goats, and December to April for elk, mule deer, white-tailed deer and moose.

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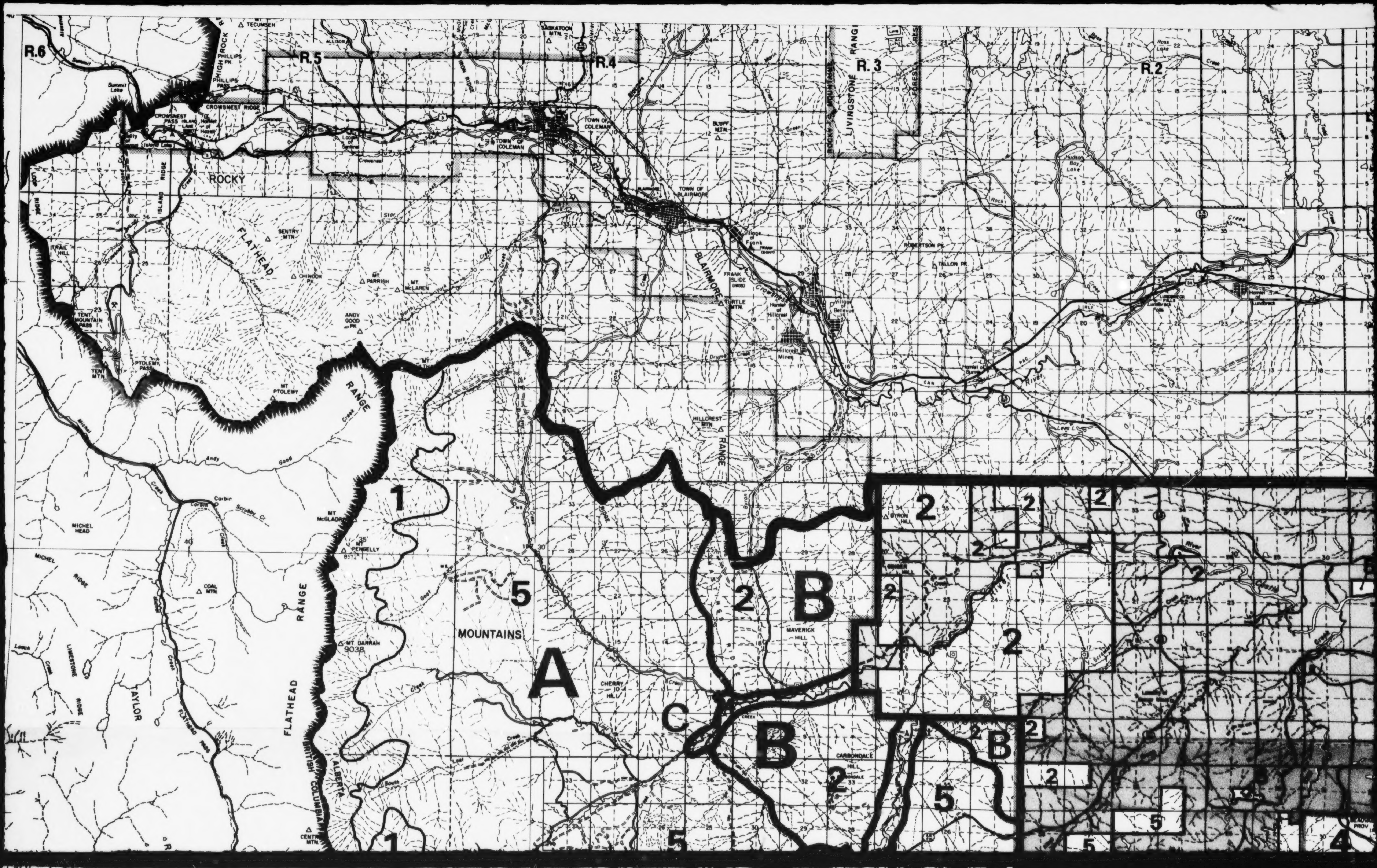
R.6
R.5
R.4
R.3
R.2
MT TECUMSEH
SASKATOON MTN
PHILLIPS PK
PHILLIPS PASS
HIGH ROCK
Summit Lake
CROWSNEST PASS
CROWSNEST RIDGE
Island Lake
TOWN OF COLEMAN
BLUFF MTN
LIVINGSTONE RANGE
ROCKY MOUNTAINS
Hudson Bay Lake
Ross Lake
ROCKY
ISLAND RIDGE
TOWN OF BLAIRMORE
Frank
FRANK SLIDE (1903)
ROBERTSON PK
TALLON PK
TURTLE MTN
Village of Bellevue
Hamlet of Hillcrest
Hillcrest Mines
Lundbreck
Lundbreck Falls
Hamlet of Burmis
Lees L.
FLATHEAD
SENTRY MTN
TRAIL HILL
CHINOOK PK
MT PARRISH
MT McLAREN
ANDY GOOD PK
BLAIRMORE RANGE
TENT MOUNTAIN PASS
TENT MTN
PTOLEMY PASS
MT PTOLEMY
RANGE
HILLCREST MTN
RANGE
Andy Good Creek
Michel Creek
Corbin
Scrubby Cr.
MICHEL HEAD
MT McGLADREY
MT PENGELLY 9512
MICHEL RIDGE
COAL MTN
FLATHEAD RANGE
LIMESTONE RIDGE
TAYLOR
FLATHEAD PASS
MT DARRAH 9038
MOUNTAINS
CHERRY HILL
BYRON HILL
MAVERICK HILL
CARBONDALE HILL
CENTRE MTN
BRITISH COLUMBIA
ALBERTA
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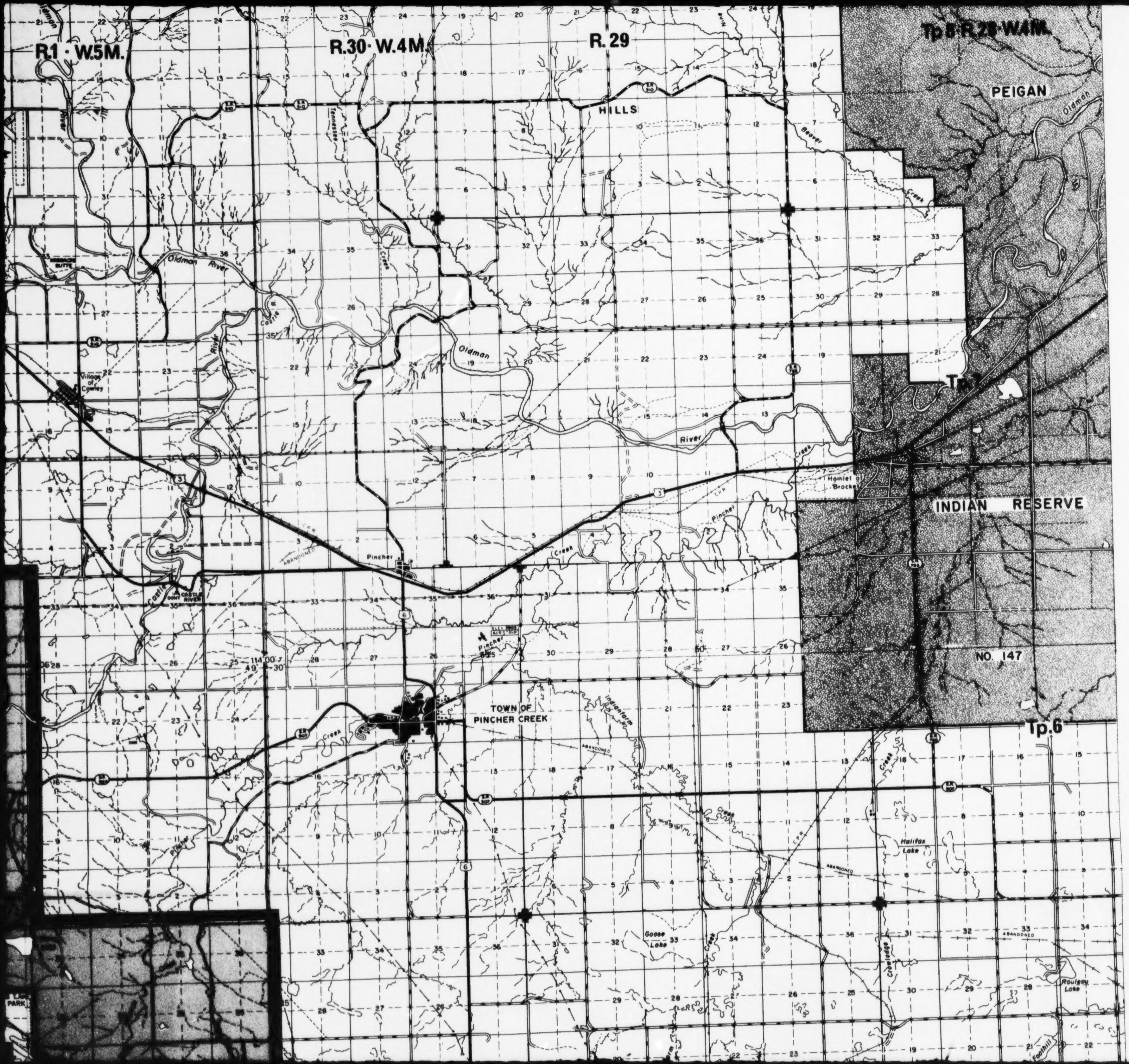
SUB-REGIONAL
INTEGRATED RESOURCE PLAN



R.1 · W.5M.
R.30 · W.4M.
R.29
Tp.8 R.28 · W.4M.
PEIGAN
INDIAN RESERVE
NO. 147
HILLS
Oldman River
Castle River
Pincher Creek
Beaver Creek
Tennessee Creek
Indianfarm Creek
Village of Cowley
Hamlet of Brocket
Pincher
CASTLE RIVER
TOWN OF PINCHER CREEK
Tp.7
Tp.6
Goose Lake
Halifax Lake
Rouleau Lake
Cherry Creek
Foothills Creek
ABANDONED
114°00'
49°30'
3
6
PARK

SCALE - 1:100 000

2
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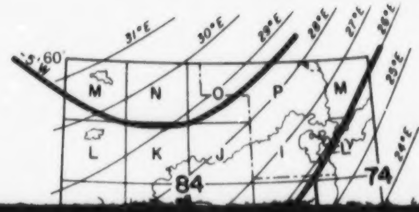
0
2
4
6
8
10
Kilometres
Kilometres
Miles
Miles
1
0
1
2
3
4
5
6

WEST OF THE FOURTH AND FIFTH MERIDIAN

▬ **Planning Area Boundary**

Patent Land



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27°E
26°E
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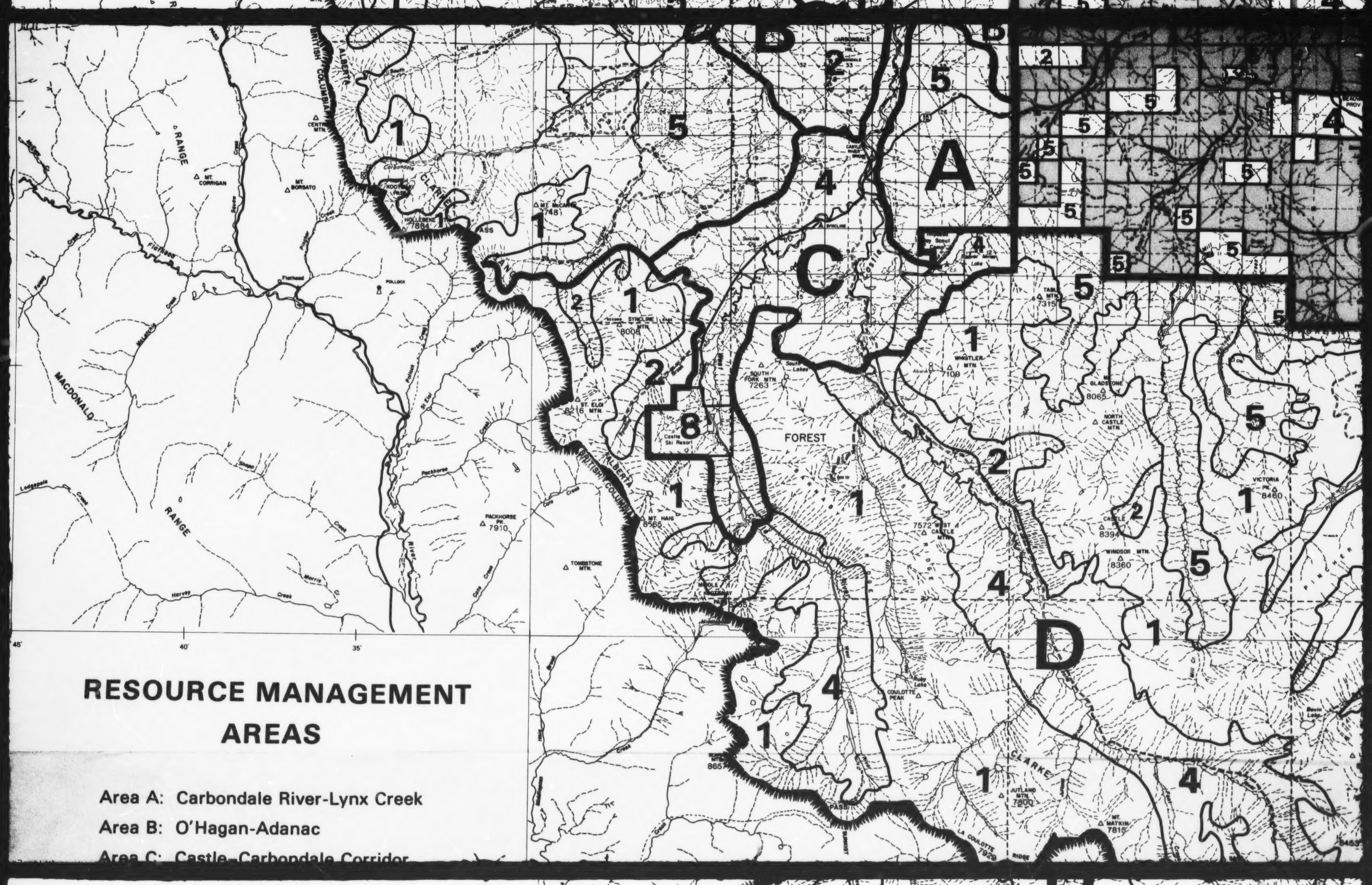
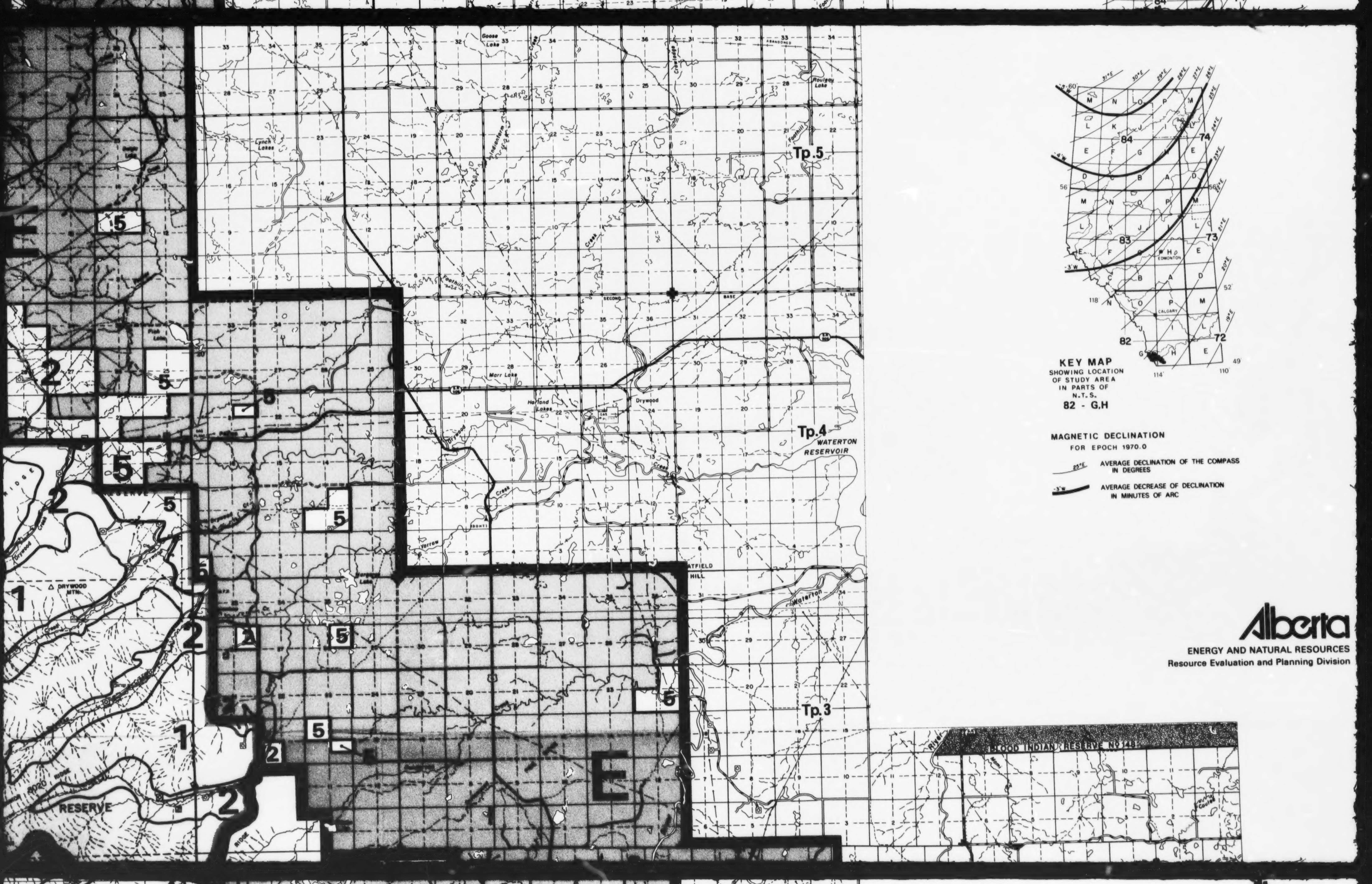

A
B
C
D
BRITISH COLUMBIA
ALBERTA
RANGE
MT. CORRIGAN
MT. BORSATO
CENTRE MTN.
Carbondale
KOOTENAY
CLARKE
HOLLEBEKE 7884
MT. McCARTY 7748
Flathead
POLLOCK
MACDONALD
RANGE
Lodgepole Creek
Harvey Creek
Packhorse
PACKHORSE PK. 7910
TOMBSTONE MTN.
ST. ELOI MTN. 8216
SYNCLINE MTN. 8008
Castle Ski Resort
MT. HAIG 8565
CARBONDALE HILL
CASTLE RIVER
Suicide Ck
SOUTH FORK MTN 7263
South Lakes
FOREST
WHISTLER MTN. 7109
TABLE MTN. 7315
GLADSTONE 8065
NORTH CASTLE MTN
CASTLE 8394
WINDSOR MTN. 8360
VICTORIA PK. 8460
7572 WEST CASTLE MTN
COULOTTE PEAK
JUTLAND MTN. 7900
MT. MATKIN 7815
LA COULOTTE 7929
RIDGE
PASS
45'
40'
35'

RESOURCE MANAGEMENT AREAS

Area A: Carbondale River-Lynx Creek

Area B: O'Hagan-Adanac

Area C: Castle-Carbondale Corridor



Tp.5
Tp.4
Tp.3
Goose Lake
Lynch Lakes
Rouleau Lake
Foothills
Indianfarm
Creek
Pincher
Pine Lake
Marr Lake
Harland Lakes
Drywood
GAS PLANT
WATERTON RESERVOIR
HATFIELD HILL
Waterton
River
Yarrow
Creek
Drywood
Drywood Creek
DRYWOOD MTN.
South
RIDGE
RESERVE
ABANDONED
SECOND
BASE
LINE
BLOOD INDIAN RESERVE Nº 148
Horseshoe Lake
E
1
2
5
84
83
82
74
73
72
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114
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EDMONTON
CALGARY
-4°W
-3°W
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30°E
29°E
28°E
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24°E
23°E
22°E
21°E
20°E
19°E

KEY MAP
SHOWING LOCATION
OF STUDY AREA
IN PARTS OF
N.T.S.
82 - G,H

MAGNETIC DECLINATION
FOR EPOCH 1970.0

25°E AVERAGE DECLINATION OF THE COMPASS IN DEGREES

-3'W AVERAGE DECREASE OF DECLINATION IN MINUTES OF ARC

Alberta
ENERGY AND NATURAL RESOURCES
Resource Evaluation and Planning Division

RESOURCE MANAGEMENT AREAS

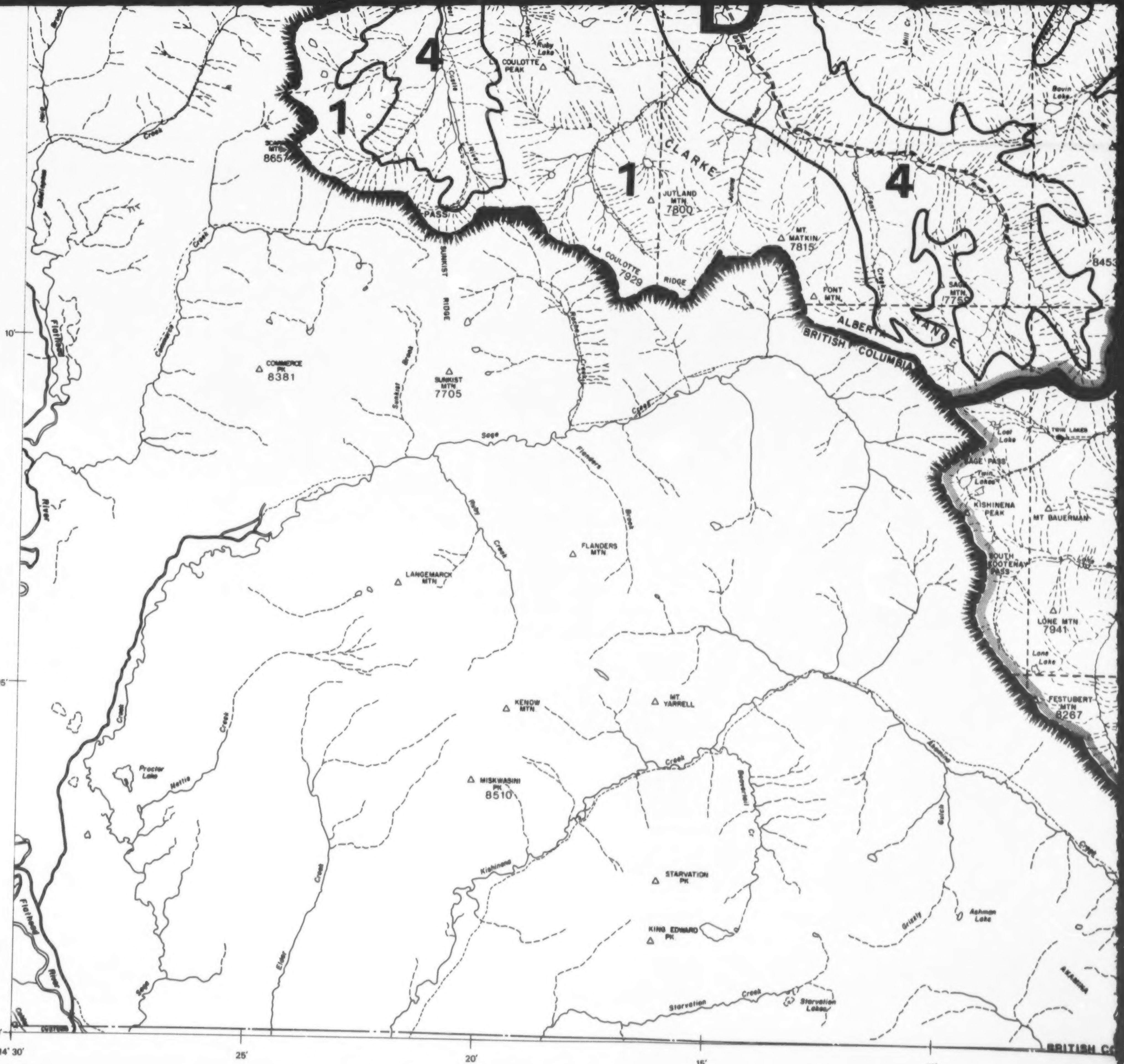
Area A: Carbondale River-Lynx Creek
Area B: O'Hagan-Adanac
Area C: Castle-Carbondale Corridor
Area D: Castle-Front Range Headwaters
Area E: Castle Foothills

▬ **Resource Management Area Boundary**

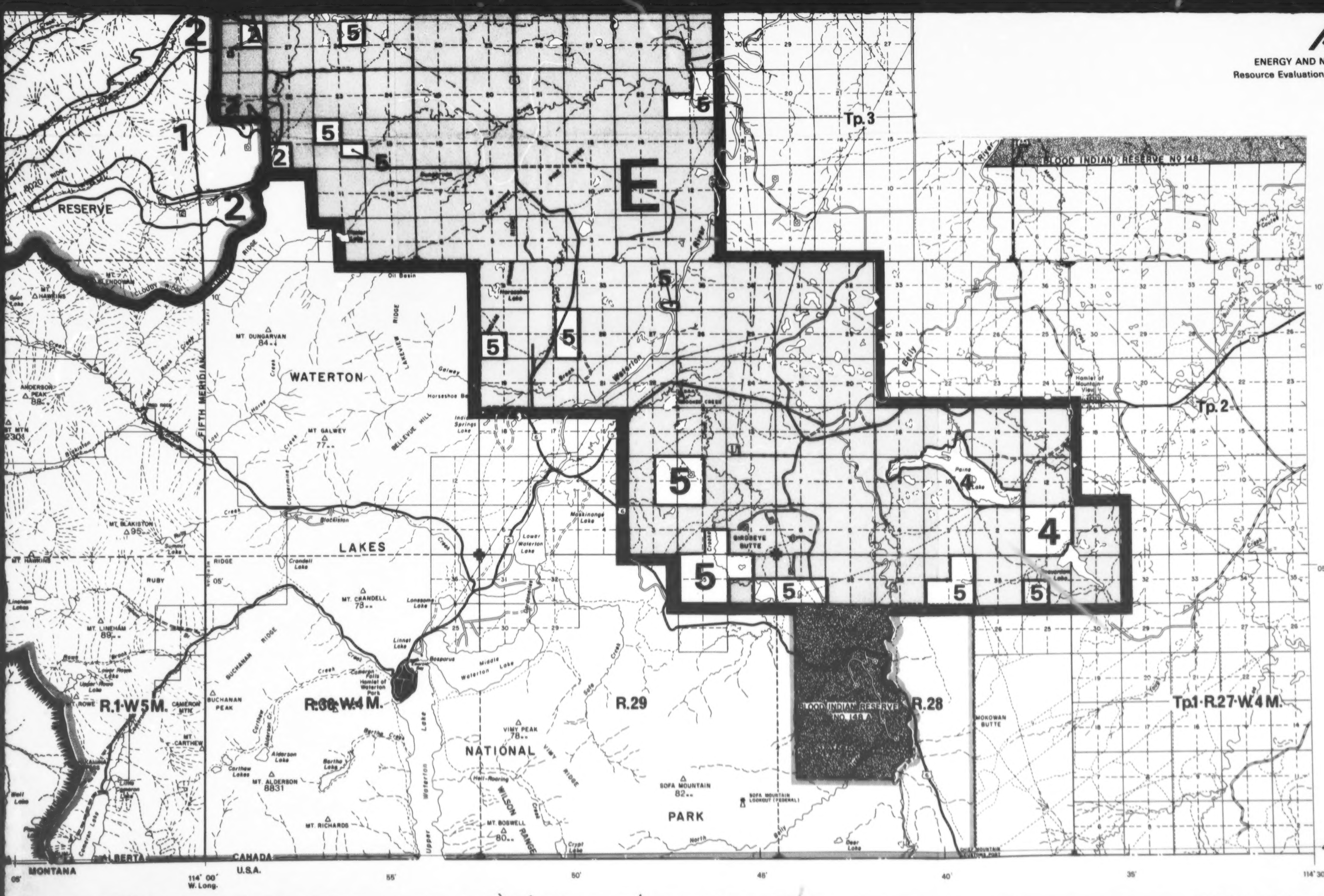
REFINED EASTERN SLOPES ZONES

1 Prime Protection
2 Critical Wildlife
3 Special Use (not applied)
4 General Recreation
5 Multiple Use
6 Agriculture (not applied)
7 Industrial (not applied)
8 Facility

Approved June, 1985


D
1
4
1
4
COULOTTE PEAK
CLARKE
JUTLAND MTN 7800
MT MATKIN 7815
LA COULOTTE 7929 RIDGE
FONT MTN
SAGE MTN 7750
8453
PASS
SUMMIT RIDGE
8657
ALBERTA
BRITISH COLUMBIA
RANGE
COMMERCE PK 8381
SUNKIST MTN 7705
Sage
Flanders
Ruby Creek
LANGEMARCK MTN
FLANDERS MTN
Lost Lake
Twin Lakes
SAGE PASS
KISHINENA PEAK
MT BAUERMAN
SOUTH KOOTENAY PASS
LONE MTN 7941
Lone Lake
FESTUBERT MTN 8267
KENOW MTN
MT YARRELL
MISKWABINI PK 8510
Procter Lake
Nettie Creek
Creek
Kishinena
STARVATION PK
KING EDWARD PK
Starvation Creek
Starvation Lakes
Grizzly Gulch
Ashman Lake
Akamina
Elder Creek
Sage
Flathead River
River
10'
05'
49°00'
114° 30'
25'
20'
15'
10'
BRITISH CO

Alberta
ENERGY AND NATURAL RESOURCES
Resource Evaluation and Planning Division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RESERVE
Tp.3
BLOOD INDIAN RESERVE No 148
Tp.2
WATERTON
LAKES
NATIONAL
PARK
FIFTH MERIDIAN
MT DUNGARVAN
MT GALWEY
MT BLAKISTON
MT CRANDELL
MT LINEHAM
MT ROWE
CAMERON MTN
MT CARTHEW
MT ALDERSON 8831
MT RICHARDS
MT BOSWELL
VIMY PEAK
SOFA MOUNTAIN
SOFA MOUNTAIN LOOKOUT (FEDERAL)
BUCHANAN PEAK
BUCHANAN RIDGE
ANDERSON PEAK
MT HAWKINS
MT GLENDOWAN
CLOUDY RIDGE
LAKEVIEW RIDGE
BELLEVUE HILL
RUBY RIDGE
WILSON RANGE
VIMY RIDGE
BIRDSEYE BUTTE
MOKOWAN BUTTE
Oil Basin
Horseshoe Basin
Indian Springs Lake
Maskinonge Lake
Lower Waterton Lake
Middle Waterton Lake
Upper Waterton Lake
Linnet Lake
Lonesome Lake
Crandell Lake
Summit Lake
Cameron Lake
Alderson Lake
Bertha Lake
Carthew Lakes
Crypt Lake
Deer Lake
Payne Lake
Hamlet of Waterton Park
Hamlet of Mountain View
Bosporus
Cameron Falls
Waterton River
Belly River
Blakiston Creek
Hell-Roaring Creek
Sofa Creek
CHIEF MOUNTAIN CUSTOMS POST
BLOOD INDIAN RESERVE NO. 148 A
R.1·W.5M.
R.30·W.4M.
R.29
R.28
Tp.1·R.27·W.4M.
CANADA
U.S.A.
MONTANA
ALBERTA
49°00'N.Lat.
114°00' W. Long.
114°30'
05'
55'
50'
45'
40'
35'
10'